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RESOURCE CONSERVATION AND RECOVERY ACT—OVERSIGHT

HEARINGS

BEFORE THE

SUBCOMMITTEE ON HAZARDOUS WASTES AND TOXIC SUBSTANCES

OF THE

COMMITTEE ON
ENVIRONMENT AND PUBLIC WORKS
UNITED STATES SENATE

ONE HUNDREDTH CONGRESS

FIRST SESSION

APRIL 14, 1987—BOZEMAN, MT
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RESOURCE CONSERVATION AND RECOVERY ACT—OVERSIGHT

Alternative Technologies

TUESDAY, APRIL 14, 1987

U.S. Senate,
Committee on Environment and Public Works,
Subcommittee on Hazardous Wastes and
Toxic Substances,
Bozeman, MT.

The Subcommittee on Hazardous Wastes and Toxic Substances met, pursuant to notice, at 9:00 a.m., in the Bozeman City Library, Bozeman, Montana, Hon. Max Baucus [chairman of the subcommittee] presiding.

Present: Senator Baucus.

OPENING STATEMENT OF HON. MAX BAUCUS, U.S. SENATOR FROM THE STATE OF MONTANA

Senator Baucus. Good morning, let's begin. I'll first begin by making somewhat of an acoustical/logistical statement, namely, that these microphones only work for the purpose of the court reporter. They do not amplify our voices for the rest of the room, so all of us are going to have to speak up a little bit so that we can all hear.

This is the first of several hearings that the Subcommittee on Hazardous Wastes and Toxic Substances, which I chair, will be holding on hazardous wastes, essentially because the authorization for RCRA, as most of us know, expires at the end of next year. Since we're in the middle of a 4-year period, after the 1984 amendments to RCRA and with the expiration of those amendments and the RCRA reauthorization of 1988, we're beginning to look toward reenacting RCRA and attempting to find what changes and modifications, if any, make sense.

It is also fitting, I think, to hold today's hearings here because Bozeman well represents Montana, and Montana represents the West, which is a bit different from other parts of the country in the sense of space and distance and different special considerations, not only for Superfund and cleanup, but also for the disposal, treatment, and storage of hazardous waste. So today we are going to be focusing not only on what changes seem to make sense under RCRA, but also what special considerations make sense for the facilities and generators in the West compared to other parts of the country.

In addition to that, there will probably be some specific emphasis on new, innovative ways for treatment of hazardous waste.

We are fortunate to be in Bozeman with MSU and their folks working on various new, creative, innovative ways to treat hazardous wastes. We particularly want, as a national policy, to tend to move away from land disposal of wastes, although the 1984 amendments did tighten up land disposal requirements with liners and leachate facilities and so forth. There is, I think, a strong national policy to move toward treatment—incineration, whatever—away from land disposal, but moving more toward treatment to try to find more creative, innovative ways to speed up the treatment process, and thereby help EPA move a little more quickly—there have been some delays there—but more fundamentally, to address the basic hazardous waste problem of land disposal.

Here at home, we have particular questions on wood preserving wastes. That is a typical problem in the country but it tends to be a bit more of a western problem than in the other parts of the country. We also have to consider the "special waste" category that basically involves mining tailings, again, a western consideration. And finally, just ask the witnesses for whatever open-ended comments that they may have that we may not specifically address in the questions that I have or the points that the listed witnesses may make.

So just to recap, let's look at where we are during this 4-year period; what works and doesn't work; how we can move more quickly toward the more specific and more desirable goal of reducing land disposal, moving much more toward a treatment that works, that makes sense, so that most folks can rest more assured that the ground water is not contaminated by hazardous waste and that folks can rest more assured that the water is clean, you can drink it, it's safe, and so forth. That's our main goal. The more we can move toward better treatment, the more easily we will reach and attain that goal.

[Senator Baucus' written statement follows:]

OPENING STATEMENT OF HON. MAX BAUCUS, U.S. SENATOR FROM THE STATE OF MONTANA

Let me begin by welcoming you to today's hearing. Much of the West and Northwest are represented here today. I hope some of you who have come a long distance will take the opportunity to enjoy our state before you leave.

Today's hearing represents the first hearing I have chaired that addresses the management of the nation's hazardous waste problem.

It is fitting that today's hearing be held here in Bozeman. Montana is a vast, sparsely populated area with unique problems of treatment, storage and disposal of hazardous waste.

Nationwide, there is tremendous concern over toxic waste in our lakes, rivers, streams and groundwater.

While considerable progress has been made—both through the Superfund program to clean up hazardous waste; and the Resource Conservation and Recovery Act to manage hazardous waste—the public's concern over these harmful materials continues to grow.

The 1984 amendments to the Resource Conservation and Recovery Act chartered a new course. Federal, state, and local officials would work together to attack the problem at the source—treating hazardous waste instead of simply disposing of it.

We are at the mid-point of the 4 year authorization. The law will expire in 1988. Today's hearing and a series of hearings that I plan to hold over the coming year will determine what changes, modifications, and improvements are needed to manage hazaradous waste. Most importantly Congress and the American public must push the Environmental Protection Agency to move towards the treatment of all waste.

A key to treating hazardous waste is the development of new, innovative and alternative technologies.

Research, and subsequent waste treatment demonstration projects are necessary if the threat to our health and livelihood from toxic waste is to be eliminated.

The purpose of today's hearing is to focus on the use of these alternative technologies here in Montana and throughout the West. I hope to hear about problems, opportunities, and concerns with hazardous waste, and the implementation of hazardous waste laws.

Our largest source of hazardous waste currently regulated under RCRA is petroleum refinery wastes. Under the Superfund our past hazardous waste problems—wood preserving wastes and mine wastes—continue to be the most pressing problems.

In the case of wood preserving wastes, EPA has recently proposed that they be regulated as hazardous waste. This is good news. Treatment of these wastes is critical to Montana and the rural west.

In the case of mine waste, EPA has competed its study of "special waste" and is in the process of establising a regulatory structure. Congress needs to examine the problems posed by these wastes carefully and develop a sound, fair regulatory structure.

These waste management problems share many things in common. Each occupies vast land areas. Each waste site is comprised of generally a homogeneous toxic material. Each may be a good condidate for alternative technologies such as bioremediation of innovative recovery systems.

Today's hearing will focus on the problems of moving hazardous waste treatment effect forward and getting alternative, innovative technologies in place. I look forward to hearing today's testimony of our distinguished guests, and thank you all for your attendence and interest in this subject.

Senator BAUCUS. So let's begin. I notice in the audience there are a couple of folks who, I think, deserve some special recognition. One is Jane Jalinski, County Commissioner; Jane, would you stand? Jane is a real active person who does a great job.

In addition, Dennis Jordan. Dennis is a City Commissioner. Dennis, would you stand? Dennis, too, has been very active in this area, and I am very glad to see both Jane and Dennis here because the more we can work together, the Federal Government and the State and so forth, the better we can find some results here.

We have to finish this hearing by 11:30, so we have to be "tight and bright," as the journalism professors and editors tell their reporters in writing their stories. I ask, therefore, that each person hold "tightly and brightly" to a five-minute limitation and get to the heart of the matter. Just be jiffy and succinct, and your full statements will be in the record. We read them and others read them as well, because they will be in the hearing record, so let's begin.

We'll start off with Peter Jones.

Mr. JONES. Dr. Dratz will give our testimony.

Senator BAUCUS. Okay, fine. Why don't you just begin, Doctor? Give your full name and who you are, who you represent, and let's get on with it.

STATEMENT OF EDWARD A. DRATZ, DIRECTOR OF RESEARCH, MSI DETOXIFICATION, INC., BOZEMAN, MT

Dr. DRATZ. My name is Edward Dratz. I am Director of Research for MSI Detoxification, Inc., and I am presenting the testimony this morning for our company.

Senator BAUCUS. Do you have a written statement?

Dr. DRATZ. Yes, I do, much more extensive than my oral remarks.

Senator BAUCUS. Do I have it? Yes, I do.

Why don't you go ahead?

Dr. DRATZ. MSI Detoxification, Inc., which is abbreviated "MDI," is a new small business which has been formed to develop biological and chemical detoxification processes to remediate hazardous waste problems on-site. MDI's Bozeman, Montana-based staff is currently concentrating on the development of waste site characterization technologies and providing analytical services for Government and private clients. We are also developing biological remediation processes for specific application in the Northwest.

MDI appreciates the opportunity to provide testimony at this hearing.

Many innovative approaches to solving hazardous waste problems are in various stages of development, but very few of even the most promising approaches are being tried.

MDI is a strong advocate for the creation of a climate in which innovative technologies, useful for effective solutions to hazardous waste problems, may be readily developed and implemented by qualified individuals and firms who have a commitment to contribute to this field.

A key point that I want to emphasize this morning is that Government agency policies do not facilitate the development and application of new technologies to environmental hazardous waste problems. There is consensus that hazardous waste treatment should be carried out on-site rather than transporting the wastes and burying them or treating them at remote sites, yet very few methods are currently available to accomplish these goals. Considering the magnitude of the problems and the limited effectiveness of current methods for in situ detoxification of hazardous waste, the U.S. Government should be supporting a major research, development and demonstration effort in this crucial area.

Private companies face a long, hard road in funding the development of and gaining acceptance for innovative technologies in the hazardous waste field. The limitation of free market forces within the hazardous waste field is exacerbated by a small number of large engineering firms that dominate the field, with the support and direction of the regulatory agencies. This climate creates impediments to the best technologies winning out on a site-by-site basis.

An example of a program that might benefit from congressional encouragement in this regard is the Superfund Innovative Technologies ("SITE") Program. This program is now directed to providing EPA validation for fully developed processes but pays none of the costs of field tests. SITE is also directed by legislation to sponsor the development of innovative technologies; however, MDI discussions with the EPA headquarters-level director of the SITE program indicate that no funds will be provided by SITE for the development of innovative technologies at this time or in the near future, and this is one of the major Government programs in place that is supposed to do that, to my understanding.

A key problem with the SITE program is that a major cost of process development is the scale-up of laboratory or bench-scale processes to the field demonstration scale. This cost factor will impede the complete development of many new approaches and will select for major corporations and against the entrepreneur or small company which may have very valid and innovative technology to offer.

The SITE program also casts the EPA in the role of referee, and therefore precludes the addition of EPA expertise to the development cycle of a process. EPA sponsors an SBIR program, but it is on quite a small scale considering the magnitude of the problem.

My written testimony includes a more detailed list of suggestions of methods to foster development of new technologies, and I will spare you reading them into the record.

The in situ treatment of mixed hazardous wastes in complex substrates such as soils and deep aquifers is a problem which requires scientific understanding and solutions prior to the development and implementation of engineering approaches. There is a need, however, to shorten the long investigatory periods often associated with gaining scientific understanding. A way to facilitate the timely development of scientific understanding is to support substantially greater development of industry-university cooperative research programs. Generation of mutually beneficial university-industry relationships with Government support—but without excessive Government interference—can markedly assist in solutions to the hazardous waste problem.

MDI has, for example, developed a formal relationship with Montana State University in Bozeman which is mutually beneficial and which permits a clear division of activities along the lines of interest and capabilities. MDI would be pleased to discuss the nature of this contract more fully with subcommittee members, as it might be useful as a model for implementation of some of these suggestions.

The overriding concern of RCRA and CERCLA environmental protection efforts is directed toward safeguarding people against health hazards. The goal of EPA activities, however, has been to determine the levels of toxins in the environment. The direct measure of toxic effects on humans in general has not been attempted.

The Agency for Toxic Substances and Disease Registry—that's quite a mouthful, ATSDR—is charged with determining hazards to human health, but they so far apparently have not been measuring toxic effects on individuals directly. The question of "how clean is clean," which arises at every site, hinges on the health hazard issue; hence, it can never be resolved with confidence until the toxicology is better understood.

MDI urges that legislation be implemented to (1) provide a major research effort in the U.S. to develop effective methods to assess human body burdens of toxic waste, to (2) correlate human body burdens of toxins with human health and disease; and, (3) to develop more rapid and effective biological methods for screening toxicity of materials from waste sites rather than simply measuring toxin levels. Toxicity can depend on a lot of variables that are not now being studied.

Senator BAUCUS. I'm going to have to ask you to summarize.

Dr. DRATZ. Okay, fine.

My summary is that new programs are needed for developing alternative hazardous waste treatment technologies and for screening them for use on a site-by-site basis. These developments will require Government participation and funding in implementation. To be most effective, such programs would have to ensure a freely competitive environment in which enterprises could be more certain of an adequate return on investment if their technologies were judged effective. Such programs could markedly accelerate the development of acceptable solutions in terms of process, speed, effectiveness, reliability and cost.

The issue of substance toxicity to humans to resolve the "how clean is clean" question is of paramount importance to the mitigation of hazardous waste and induced adverse health effects.

It is also important to be able to use the most advanced and effective analytical methodologies that are available, which is not now always possible under EPA regulations.

Thank you.

Senator BAUCUS. Thank you.

I just encourage each of you to just say in your own words what you want to say. That's probably a good way to summarize if your written statement is significantly beyond five minutes.

Okay, Cathy, I guess you're next.

STATEMENT OF CATHY FEOLE, ECOVA, INC., REDMOND, WA

Ms. FEOLE. Again, my name is Cathy Feole. I am the Director of Environmental Affairs for Ecova Corporation. My company is involved in the research and development of innovative technologies, with emphasis in bioremediation.

Today I would like to address the advantages of new treatment methods and the regulatory issues involving future development and use.

There are many advantages to using new technologies to treat hazardous waste. New and innovative methods can be cost-effective, easier to implement, and in many cases more protective of the public health and environment than traditional disposal methods. On-site use of technologies will help solve the current landfill capacity problem, preventing possible releases from trucking waste through a State to a landfill, and may cut future liability of landfilling certain types of waste.

Research into the use of new treatment technologies has proved to be promising. Our own field experience with bioremediation alone, and in conjunction with physical and chemical methods, has shown great potential. Bioremediation has proven effective on hazardous waste sites with hydrocarbons, volatileorganics, and other solvents. Current research on substances thought to be untreatable by this method, such as pentachlorophenol, has shown positive results. Biologicals can be used to treat soil and ground water, and they have the potential to decontaminate vapors under certain circumstances.

Technologies such as bioremediation can be used with a combination of physical and chemical treatment systems to clean a site. These systems could include composting, soil treatment, air stripping, soil washing, or in situ bioremediation.

My company is on the cutting edge of the innovative technologies. Our research thus far in the development of new treatments can address many of the pressing environmental problems we are faced with on complex hazardous waste sites. However, in order to encourage the development and implementation of new techniques, regulatory, institutional and perceptional hurdles must be overcome. We request you to consider the following five issues and suggestions. These issues will involve permitting, treatment incentives, land treatment, knowledge of new technologies, and consistent application of CERCLA and RCRA requirements.

Number one, permitting—the permit process for research and implementation of new treatment technologies is a disincentive to its use. The current permitting process is long and costly, with little assurance that a permit will be granted. To encourage the development and use of new treatment methods, we urge that the permitting process be streamlined and consistently applied throughout the Nation.

Number two, treatment incentives—there are currently no incentives for owners to use alternative treatment technologies. Fear of the permitting process and the ease of landfilling make off-site disposal a cost-effective and less time consuming option. The State of Washington, however, in its study of hazardous waste management priorities, has recommended a framework that gives generators an incentive to look for and use new treatment options. We feel that this sort of approach will encourage the use of these new technologies.

Number three, land treatment—the land disposal prohibitions specifically disallow the land treatment of solvents and dioxins. Bioremediation, done correctly, has proved to be a good treatment option for sites with solvent contamination. Properly designed and maintained, land treatment units which limit migration are still a viable treatment method on both CERCLA and RCRA sites.

We request land treatment and its potential use under environmentally-controlled conditions be reevaluated.

Number four, knowledge of technologies—it has been our experience that agencies, owners, and many consultants are unfamiliar with many new or innovative technologies. This sometimes will cause a good technology not to be considered as a cleanup alternative on a site. A good example is the perception of bioremediation as only applicable to land farming, when actually we can use it in contained units for decontaminating soil and ground water. We recommend that personnel involved on CERCLA and RCRA sites have the opportunity to learn about new technologies through educational seminars, regular presentations by research groups and treatment companies, and site visits where such technology is being developed.

Number five, consistent application of regulations—many sites where new on-site treatment can be used are subject to both

CERCLA and RCRA requirements. A good example would be an NPL site which is also going through a RCRA closure. Cleanup standards and preferred treatment options may differ under the two separate programs. What is an acceptable cleanup level under CERCLA may not be under RCRA, thus waste material may be trucked off-site instead of pursuing on-site treatment.

We therefore urge that there be more interaction between CERCLA and RCRA programs so that cleanup standards are the same and on-site remediation is effectively accomplished.

If you would like any further detailed information on any of our treatments and bioremediation, we would happy to provide it at another time.

Senator BAUCUS. Could you provide for the record a little more detail as to what bioremediation is and what you do and how it works? Can you do that?

Ms. FEOLE. Basically, what my company does is we use naturally-occurring organisms to treat hazardous waste.

Senator BAUCUS. We get this so late, but just for the record, if you could do that. I'll ask you some questions later on, but just for the record if you could give us a little more detail. Could you send that to the committee?

Ms. FEOLE. Send it to the committee? All right.

[The information requested follows:]

Testimony Presented to the
Hazardous Waste and Toxic Subcommittee
# of the Committee on Environment and Public Works,
United States Senate

April 20, 1987

Presented to Senator Max Baucas

by
Cathy Feole
Director of Environmental Affairs
Ecova Corporation

Ecova Corporation is involved in the development of innovative treatment technologies to destroy toxic and hazardous wastes in soil and groundwater. The company researches and develops chemical, physical, and biological waste treatment processes, with an emphasis on bioremediation. We appreciate the opportunity to provide additional testimony on bioremediation treatment methods.

The choice of a specific technology or combination of technologies to treat hazardous waste involves a complex set of factors. The successful application of biological, physical, and chemical processes, individually or coupled together, must address several important factors. In biological treatments, the nature of the toxic contaminants, the microorganisms existing naturally at the site and their potential interaction with site contaminants, and site geology are important in determining the most efficient method for detoxification. Frequently physical and chemical processes are incorporated into a treatment design in order to make biological processes more effective. Microbial treatment methods for removing hazardous organic wastes in soils and water include wastewater treatment, soil treatment, and solid and liquid/solid phase bioremediation.

Advanced Wastewater Treatment

Treatment of contaminated wastewater can be accomplished both aerobically and anaerobically. One of the primary aerobic methods used to treat water soluble organic compounds is an activated sludge process. Microorganisms capable of biodegrading contaminants are initially introduced into the wastewater in a bioreactor. Following treatments, a clarifier separates the microorganisms from the treated wastewater, which is then discharged. The concentrated slurry of microorganisms (activated sludge) is recycled back to the reactor to again biodegrade contaminants. Aromatic compounds such as chlorinated phenols and chlorinated benzenes can be effectively treated in this manner.

A system similar to the activated sludge process is the aerated lagoon process. Treatment generally takes place in an earthen basin 5 to 20 ft deep that is lined with clay or plastic. Aeration is provided mechanically, and soluble organic compounds can be degraded, oxidized, or converted into biomass (biological debris). Sedimentation of this slurry results in discharged treated water and concentrated biomass. Lagoons or surface impoundments that already exist at industrial sites can normally be upgraded to aerobic lagoons for treatment purposes.

Trickling filters are another method to biodegrade contaminants in water. Trickling filters consist of a filter bed that provides a surface for microbes to grow. An enclosure, usually made of concrete, and an underdrain system to support the media, provide an uninterrupted path of flow for liquid to drain over a thin film of microorganisms. Soluble organic compounds, similar to those that can be treated with activated sludge or aerated lagoon processes, can be easily degraded with trickling filters.

A method of aerobic treatment that may be used for petroleum and petrochemical wastewaters is a rotating biological contractor, which consists of parallel circular discs placed in a tank. Microbes are allowed to grow on the disc surfaces. Mechanical rotation brings the organisms into contact with liquid thus allowing the organisms to degrade contaminants.

Anaerobic (oxygen limited) treatment is commonly used in municipal and industrial wastewater treatments. This technology is often used to degrade organic contaminants with minimal biomass production (biological debris). Typically, 75% to 85% of the waste material will be converted by anaerobic biological processes to methane and $C0_2$ gases. In aerobic processes, 40% to 50% of organic waste is converted to cell mass, resulting in a higher quantity of sludge at the end of treatment.

Anaerobic treatment methods may be applied as a pretreatment to aerobic processes in order to degrade high strength organic waste for industries such as meat packing, brewing, pharmaceutical, chemical, and food processing. Petrochemical plants may use an anaerobic fixed film treatment, which consists of a column of solid medium through which waste flows which creates contact with microorganisms.

Soil Treatment/Solid Phase Bioreactors

A proven bioremediation treatment technique involves the use of microorganisms in soil to remove contaminants. The most common form of soil detoxication using microorganisms is land treatment. However, the general principles of land treatment can also be used in composting and solid phase bioremediation. A solid phase system differs from other soil treatment because it is fully enclosed and prohibits contaminants from entering the air, water, and soil.

The treatment process for land treatment and solid phase bioremediation is the same. Application of treatment to contaminated soil can be done in place (land treatment) or by removal of the contaminated soil to an enclosed treatment facility. The rate of degradation is influenced by many factors. These include the nature of the organic contaminants the concentration levels at which they are present and the numbers and types of microbes present. The purpose of land treatment is to allow microbes to degrade toxic organics by utilizing these compounds as carbon and energy sources, resulting in the production of $C0_2$ and H_20 and biomass. Compounds such as creosotes (wood treating compounds) and petroleum products can be degraded in this way.

To increase the rate of degradation of a given contaminant, nutrients such as nitrogen, phosphorus, and trace nutrients, may be added to the microbes.

A number of factors influences the effectiveness of soil treatment. Obvious physical limitations such as the location of the soil will necessitate removal to a suitable treatment area. Other crucial factors influencing efficiency of land treatment are:

1. The nature of the toxic compound
2. Soil aeration for oxidative processes to occur
3. Soil pH
4. Soil temperature
5. Soil moisture
6. Availability of nutrients for microorganisms
7. The density and types of microbes present
8. Rate of degradation
9. Salinity
10. Whether toxic substances are present that may inhibit degradation or the population of the microbes, i.e., high concentrations of heavy metals or cyanide.

Soil treated in a solid phase bioreactor has many advantages over land treatment. This system allows the temperature and moisture in environment to be controlled in areas where climate is a problem. Soil treatment usually requires tilling of the soil to obtain good aeration and even distribution of microbes and contaminants. An advantage to an enclosed system is the ability to control volatilization of some compounds into the atmosphere. Carbon adsorption is normally used to capture volatile organics in this type of facility.

Composting is another method of treating soil in a contained system. Contaminated soil is blended with dry organic material like straw to provide a support medium for biological growth. Mechanical methods are also utilized to control temperature and mixing in order to enhance the aerobic-anaerobic cycle.

Groundwater or water from aquifers can be treated either in situ or by bioreactor systems and returned to the ground. In situ treatment of areas such as spills, landfills, dump sites, and underground storage tanks areas may involve other types of treatments as well as biological treatment. The nature of the compound is important in determining the treatment method.

Liquid/Solid Bioreactors

A liquid/solid bioreactor is a system for treating both soils and sludge waste in an enclosed unit. For waste management, a bioreactor is used to bring microorganisms in contact with contaminated soil and groundwater in a slurry or liquid.

Liquid/solid bioreactors systems involve significantly greater material handling and costs. However, there are advantages: A liquid/solid bioreactor will generally have a faster rate of degradation than other treatments. There is also more control over the chemical and physical process.

Ecova wishes to thank the Subcommittee for the opportunity to present additional information on bioremediation processes.

sw:41

Senator BAUCUS. Okay. Thank you very much.

Okay. Mr. Doug Dollhopf with the Reclamation Research Unit here at MSU.

STATEMENT OF DOUGLAS J. DOLLHOPF, RECLAMATION RESEARCH UNIT, MONTANA STATE UNIVERSITY

Dr. DOLLHOPF. I am also here on behalf of MSI Detoxification, Inc., here in Bozeman.

Although individuals in EPA and the Office of Surface Mining in the U.S. Bureau of Mines have advised me that acid problems are not present in the western regions, my purpose today is to inform you that control of acid production in mine waste is the number one problem limiting mine reclamation in Montana and this region.

In the State of Montana there are nine CERCLA or Superfund hazardous waste cleanup sites. Of these, five sites are directly related to historical mining, smelting and related activities. In addition to the five mining-related Superfund sites, there are hundreds of abandoned hard rock, coal and bentonite mines throughout Montana that are threatening the environment, health and safety of the nearby populace. All or part of these sites are acid-producing.

There is a common denominator among the mining-related Superfund sites and various abandoned mine lands in Montana and throughout the western United States. This common link can be traced to a chemical reaction between mineral pyrite, oxygen and water. Prior to mining, the ore and waste rock lies in a mostly oxygen-free environment. When these materials are brought to the surface during the mining process they are subject to physical and chemical weathering in the presence of oxygen and water. If these materials contain sulfur-bearing minerals, they are subject to acid production in our region. It is well understood that pyrite, in the presence of oxygen and water, will react to form sulfuric acid.

This chemical reaction between pyrite, water and oxygen has resulted in thousands of acres of unusable and hazardous lands in Montana alone through the process of acid mine drainage and existence of acid mine soils or tailings deposits.

To further exacerbate matters, the acidic medium—soil and water—liberates heavy metals such as lead, zinc, copper and manganese. Of prime importance is the leaching of heavy metals into ground water resources, the erosion of heavy metal-laden mine waste into streams and lakes, fugitive dust containing these metals, and metal-contaminated soils which inhibit plant growth. Metal contaminants can enter the food chain through plant uptake of the metals from the soil. These plants are then available to wildlife and livestock as forage.

In Montana where there are vast acreages of acidified, heavy metal-laden tailings deposits, mine wastes and mine soils, the remediation technique by choice is usually centered around revegetation, which is practical as an alternative to conventional hazardous waste site cleanup technologies such as burial and removal. In order to establish a permanent vegetative cover on acidic metal-contaminated mine waste, it is necessary to chemically neutralize the root zone prior to plant establishment.

Liming is likely to be a necessary component of acidic mine waste remediation in this State and region and on Superfund sites throughout the western region. Once a stable vegetative community is established, the leaching of metals in the ground water is largely mitigated and the blowing of metal-laden dust is largely mitigated. However, there are two technical limitations with respect to liming acid mine waste to provide a suitable, neutralized root zone.

The first problem is that we lack an adequate analytical procedure which will accurately predict the total lime requirement necessary to permanently neutralize the acid mine soil and prevent future reacidification. Research along these lines must continue until an adequate lime requirement testing technique is developed and properly field-tested with respect to various site-specific conditions.

Second, the current best available technology only allows for effective incorporation of lime to a depth of six inches. It is well known that plant roots need to penetrate to a depth of several feet, but will not venture beyond a zone of lime incorporation in acidic metal-contaminated mine wastes. Although the Office of Surface Mining approved funding to Montana State University to develop deep line incorporation machinery more than 14 months ago, for unknown reasons the Office of Surface Mining has failed to implement funding to date. If funding is provided, MSU will develop a deep line incorporator which can mix lime into mine waste materials to a depth of three feet. If this is successful, it will then be feasible to properly lime and seed directly into these acidic materials in a cost-efficient manner.

In addition to acid mine waste liming problems, of equal importance is the acid mine drainage issue in this State and the region and its impact on surface and ground water resources. This is a significant environmental and health problem currently unaddressed in the State of Montana with respect to remediation technology. Preliminary findings suggest wetlands may be useful in removing heavy metal burden from acid mine drainage by physical filtration and chemical exchange principles. Continued research will be required to determine if this technique is indeed practical as a remedial treatment for acid mine drainage.

Other factors affecting the success of revegetation of acidic materials should be investigated. For example, MSI Detoxification, Inc. believes that enhanced microbial communities can be effectively utilized to augment the liming effort in order to facilitate neutralization of acidic materials. Research is necessary along these lines.

Lastly, before cost- and performance-effective remedial action of the vast acidic metal-contaminated mine wastes in Montana and elsewhere can be accomplished, these issues and concerns must be addressed.

Senator BAUCUS. Thank you, Doug.

Next is Dr. Glenn Vawter, President, Western Research Institute, Laramie.

STATEMENT OF R. GLENN VAWTER, VICE-PRESIDENT, WESTERN RESEARCH INSTITUTE, UNIVERSITY OF WYOMING RESEARCH CORPORATION, LARAMIE, WY

Mr. VAWTER. Thank you, Senator. I thank you also for the promotion. I am Vice-President of Western Research Institute.

Senator BAUCUS. Well, good. You should come back to Montana more often.

Mr. VAWTER. That's right. If you're more than a hundred miles from home, you ought to get a promotion.

We're known as WRI and, as you said, we're from Laramie, Wyoming. We're associated with the University of Wyoming as a not-for-profit environmental and energy research organization. We employ 180 people.

Over the past several years we have also performed as a contract laboratory for EPA, providing specialized analytical services to the Superfund program.

As part of our research efforts, we have conducted research into recovery methods for tar sand and heavy oil for several years. From this research, we were able to devise alternative uses for such processes in the environmental field. One such example is a process we call CROW, Contained Recovery of Oily Wastes. Don't ask me why we had to give it that name, but we did. We believe this is an innovative hazardous waste treatment and cleanup technology, especially suited to oily waste sites such as the Idaho Pole Company site here in Bozeman. The process eliminates the need to dig up contaminated soils, and it uses an adaptation of proven technology previously demonstrated in the secondary recovery of petroleum. This process actually enhances conditions for both natural and induced microbial degradation.

WRI has worked for over two years to move this CROW process into the demonstration phase. We are here today to discuss some of the challenges and problems we have encountered.

The problems include, one, capital formation; two, identifying potential sites to demonstrate the technology; three, understanding EPA's SITE program priorities; and four, being included among acceptable SITE programs.

As to number one, capital formation, as I mentioned we are a not-for-profit corporation. We do not have the capital to fund a demonstration. However, under Section 311 of Superfund, Federal assistance is prohibited for full-scale demonstrations unless it can be demonstrated that private financing is impossible without Federal assistance. In any event, EPA may only provide 50 percent of the cost of a technology demonstration, up to $2 million.

As a result, we appear to be limited in our ability to seek financial assistance. Indeed, this isn't necessarily unique to us, either, for it appears to be difficult—if not impossible—for any small, innovative organization to move technology into the commercial sector without the sponsorship of a larger firm.

As to the second point, identifying a demonstration site, it is ironic that if a site other than a National Priority List Site is selected to demonstrate the technology, it is almost impossible to gain permission and permits. In the case of a National Priority List Site, if a responsible party objects to the use of an innovative or alternative technology, its demonstration, at a minimum, is delayed, if not precluded.

These situations developed because of the inherent liability associated with hazardous waste cleanup. Even with the indemnification provisions of Superfund, site-responsible parties are hesitant to allow experimental technologies on a site without sufficient evidence that the technology will work.

As to being a part of an acceptable SITE program, it appears to us that EPA's current priorities suggest a bias toward incineration and surface treatment. While this may be consistent with earlier research, we believe that in situ treatment and disposal processes offer desireable cleanup options and deserve equal opportunity.

In conclusion, then, I would state WRI's position that the site program has been in place only a short period of time, and that many of the issues will naturally be resolved as they are brought to light. Nonetheless, we would encourage both this committee and EPA to, one, ensure that small- and medium-sized not-for-profit organizations participate in the program; two, to clarify that development and demonstration can receive Federal assistance without the need for private financing; and three, consider utilizing abandoned hazardous waste sites where EPA is, in effect, the responsible party when it can be shown that such a site would expedite development, demonstration and evaluation of a technology.

Thank you very much.

Senator BAUCUS. Thank you very much, Glenn. I was tempted to make a pun about CROW and I refused.

Next we have Dale Pflug. We appreciate having you here, and welcome to Montana. You're with Biotrol?

STATEMENT OF A. DALE PFLUG, BIOTROL, INC., CHASKA, MN

Mr. PFLUG. My name is Dale Pflug, and I am Vice President of Business Development with Biotrol, located in Chaska, Minnesota. We are a combination research and development company and an on-site treatment services company that has focused on toxic and hazardous wastes. Our orientation is based upon the supply of proprietary microbiology applied in the field and the incorporation of this technology in engineered systems that permit practical decontamination of wastes.

The technology goes back over 10 years to the University of Minnesota, the Gray Freshwater Biological Institute, where they have conducted many studies on water quality. Among these studies was the decontamination of pentachlorophenol, found in many wood-preserving sites around the country.

Finding that that technology had commercial merit, we've spent the last two years in applying that technology into commercial applications in engineered systems. In fact, we have at the present time three commercial systems available: a ground water decontamination system, a surface water treatment system, and a soils decontamination system. In addition, in research and development we are conducting in situ development for toxic and hazardous wastes.

Our orientation is most specifically toward the wood-preserving industry, but yet in research and development we are concentrating on the other toxic and hazardous wastes in our industry. TCE, PAHs, coal tars, poly-chlorinated biphenols, and BTEXs are just a few of the areas that we are concentrating on.

The technology works. In fact, we have great anticipation for being able to use technology in over 60 wood preserving sites around the country. In Montana alone there are probably three sites that can use this technology today.

In on-site demonstration in Minnesota, since September of last year, we have been decontaminating ground water containing over 100 parts per million of pentachlorophenol down to the nondetectable level for discharge to a POTW. In addition, creosote components in that same site are similarly reduced to the nondetectable level.

There are obstacles, however, to the use of the technology, and particularly in places such as you face in Montana. Because the technology for all three systems that we provide generates a processed water associated with the operational processes, our alternatives to dispose of that water are either to go back to surface recharge or to discharge into a POTW or NPDES discharge permit. The current regulatory posture in this country precludes that discharge, particularly into surface waters in this country.

With the pending listing of wastes associated with the wood preserving industry, we are forced to go through a delisting process for every site in which we attempt to incorporate this technology in order to pass the benefits along to the people who utilize the technology.

In our soils and in soils decontamination system, which will be available for demonstration later in 1987, we have a system which operates 25 to 50 percent below the cost of incineration, and yet we have great concern over the priority consideration given to incineration as related to bioreclamation. We believe that the energy costs alone associated with incineration demand that we look at other alternatives, and we believe that microbiology, in fact, provides a significant method for reclamation of contaminated soils.

In terms of remediation strategies, one of the things I think is important to consider is adjusting our priorities in ground water remediation. In ground water cleanup today, the actual cleanup of the water occurs either concurrent with the removal of surface contaminants, or, more riskily, occurs after the actual removal of those sources. But in fact, in order to use innovative technologies, we need to consider in this country implementing aquifer control techniques that will permit control of migration of the aquifer into ever-increasing parts of the environment, and by doing that, implementing alternative technologies that may be accomplished over a practical and cost-effective time frame.

In order to develop new products we need to have access to additional data concerning the National Priority Sites in this country. In fact, because of the pending litigation associated with many of these sites, it is very difficult to accomplish that data. We have asked Senator Durenberger's office for access to data relative to the treatability of these sites so that we can thereby accomplish new product development that can be used practically in the field.

We appreciate the opportunity to submit this testimony. We believe there is a great potential for microbiology if we can overcome the regulatory hurdles.

Thank you very much.

Senator BAUCUS. Thank you all.

Peter, do you want to say something, too?

Mr. JONES. No, I think that pretty well covers it. We could discuss a whole lot of liability issues and things like that, but that's all in the testimony.

Senator BAUCUS. Okay. You all have helped very much here, giving some contributions to alternative technologies.

In the room here there are some folks who work with EPA, as I am sure all of you on the panel well know. Let's just for a moment address the feasibility of your various technologies, which are really addressed somewhat to different kinds of treatments, but still in the main they are alternative technologies, so as not to have land disposal as an alternative to incineration.

I would like you to think of the most legitimate questions that EPA might have with what you're doing in the development and merits of your technologies; that is, questions that evolve around, well, "It doesn't work," "It doesn't do what it's supposed to do," "It doesn't meet the 'no migration' constraint," or "It pollutes the air," or whatever. What are the most legitimate questions that EPA might ask, or the public might ask? What I would like you to do then is to rebut that most legitimate concern having to do with the feasibility and the merits of your alternative technologies.

We don't have a lot of time here, but I'll just open it up and let anybody who wants to address them, go ahead. I'm trying to get the truth, to find out what the heart of the matter is here, so what's the most legitimate question that EPA—you know, you've filed for permits and all that—so what's the most legitimate question they might ask? And then I want you to knock it out of the water as best you can.

Mr. DRATZ. Well, it is difficult to even interact with EPA to figure out who to talk to. I mean, that's one of the big problems, who to talk to in EPA about these different issues. But what one hears——

Senator BAUCUS. Could we have you state your name, please?

Mr. DRATZ. Oh, my name is Edward Dratz from MDI.

What one hears in sort of casual discussions, in no formal way, is that biological techniques don't work. And this is, I think, a foul canard.

Senator BAUCUS. What is?

Mr. DRATZ. That biological techniques don't work, is a criticism that one hears. And yet it's very difficult—to rebut a underlying bias against biological detoxification techniques. Wherever they've been carefully applied they seem to work quite well. What's needed is more extensive field testing, and it's a long step from the lab into the field, we all agree.

Senator BAUCUS. So it's your view they don't have a legitimate complaint? You just don't interact with them very much?

Mr. DRATZ. That's my summary of it, I guess.

Mr. JONES. These processes that are proposed not to work, biological processes, seem to work just fine all by themselves in nature. I think that's fairly well recognized. There seems to be a certain hysteria with respect to having to provide quick solutions that are well understood in the physical sense. These microbiological processes, if you will, Ecova and the other folks here have demonstrated that can be speeded up and used in the commercial context.

I would suggest that a question that EPA could rationally ask themselves more carefully is, do these processes work in nature? And if so, how can we commercialize them? If there are people doing that and have demonstrations of that, why are we not paying attention to that and more fully supporting those kinds of activities in terms of getting them out into the field?

Senator BAUCUS. Anyone else want to address that basic question? Glenn?

Mr. VAWTER. Glenn Vawter, Western Research, the initial question you asked, what is the most legitimate question EPA would ask us—they've asked it. We've had——

Senator BAUCUS. What is it?

Mr. VAWTER [continuing]. A real interchange with EPA——

Senator BAUCUS. What's that question, the most legitimate one?

Mr. VAWTER. The question is, how can you prove that the process, being an in situ process, has worked and has solved the problem? EPA is mandated to clean up these sites and prove that they've done so in a certain time limit, so the problem we face with in situ technologies is, one, identifying the problem, proving that we've successfully solved the problem and meeting the time deadlines that are imposed on EPA.

The answer that I have to that is, in many cases the technologies that they're employing aren't even going after some of the wastes that exist. For instance, here, where we have——

Senator BAUCUS. The technologies that who is employing?

Mr. VAWTER. That EPA is employing, or the owners that are cleaning up the sites. For instance, in some of the wood treatment sites we know that hazardous material has permeated into the bedrock, and excavation techniques do nothing to solve the problem. Consequently, the solution has typically been, well, let's just put a barrier around this whole thing and cover it up for eons and not clean it up. We think that in situ technologies have the potential to clean it up when augmented with biomethods, whereas just leaving it with a curtain around it or over the top is just going to leave it for future generations.

Senator BAUCUS. Anyone else?

Mr. PFLUG. Dale Pflug, Biotrol. I've spent 20 years in this environmental field doing remediation and cleanup of sites, and from a practical experience, part of the problem is the visibility associated with surface removal, the visibility associated with installing large incinerators. Bioremediation is not nearly as visible. It doesn't show up nearly as much in the way of funds. As a result, I don't think it's getting the attention. The visible way to demonstrate that there is something being done from an environmental standpoint is to spend a lot of money, and you can spend a lot of money by removing, by installing containment systems, or by doing incineration. That's part of the problem we're dealing with.

Senator BAUCUS. As you know, EPA is going to be on a panel a little later. I'm asking these questions for a purpose so that they can respond and so that you can hear their responses.

I'm trying to get a better handle on things, not to point the finger of blame or to complain about anybody; but just generally, what is your greatest frustration, with EPA, if I might approach it that way. Our goal is the public health and to find ways to treat this hazardous waste. So given our goal of cleanup, proper disposal, treatment, etc., what's your most legitimate frustration, generally?

Mr. JONES. In our case, given that we're in the western region, it's having access to a forum to demonstrate the efficacy of these processes. There are major engineering firms, just a few of them, that can pretty well dominate the region, make the scientific judgments, the engineering judgments, determine policy: the whole under the aegis of the EPA. It's very difficult——

Senator BAUCUS. So it's tougher for smaller firms is what you're saying?

Mr. JONES. Well, it might be tough for a large firm in a region that just doesn't happen to have the major controlling contracts. But yes, it is tough for a small firm. There's no forum——

Senator BAUCUS. What do you mean, no forum?

Mr. JONES. Well, no access to sites, to real world problems, to data, the ability to go out and—in fact, to go through the same steps that an engineering company does to implement an engineering solution. Sometimes I feel they sort of look to these innovative approaches as something that should be magic and doesn't require the intermediate steps that are associated with other projects.

Dr. DRATZ. Edward Dratz, MDI. You get the feeling that the EPA and the contractors are not interested in trying anything new. They want to try accepted "bag it, bury it" approaches, and not do something new. For example in a recent discussion one of the local representatives of one of these big contractors stated flatly that they want to use the least innovative technology——

Senator BAUCUS. Why is that? Why is there an inhibition against trying something new? What explains that?

Dr. DRATZ. I think it's safer, perhaps, or feels safer to try something that everybody else is using, whether it's terribly effective or satisfactory or not.

Senator BAUCUS. Safer in the sense that it's——

Dr. DRATZ. To cover yourself type of thing, I guess. That's the only sense I can make out of it.

Senator BAUCUS. Even though there may be another safer way to dispose of or treat the waste. Safer from the public's point of view?

Dr. DRATZ. Well, safer from a point of view of being criticized for doing something that's not accepted.

Senator BAUCUS. When you find them trying to be safer, do they seem to be really trying to determine whether your technology is, in fact, a better way? Or are they just kind of——

Dr. DRATZ. Some of these people are really quite knowledgeable and very informative, very helpful, sort of interesting and active critics who have been, I'd say, quite cooperative considering the constraints they're under, imposed by EPA and the way the industry has been going. It's not an industry that favors someone taking a courageous stand to try something different.

Senator BAUCUS. Cathy, did you want to say something?

Ms. FEOLE. I think some of the hardest problems that we have had, and other consultants that we have talked to, are trying to come up with cleanup levels with the "how clean is clean" sort of standards.

Senator BAUCUS. Come up with what?

Ms. FEOLE. "How clean is clean" standards. What standard does new technology have to meet? What happens if you are on a site that is being, as I said before, closed under RCRA? Or maybe it's also on the NPL list? Which of the two standards do you try to hit? You obviously have to go to the most restricted or the most conservative, but a lot of times we find that it's hard to even come up with some kind of standards to meet.

Senator BAUCUS. You mean they're elusive? Or they're too difficult to attain?

Ms. FEOLE. We find it's just trying to get some guidelines on what to meet, what levels to meet so that we can design something to meet those levels.

Senator BAUCUS. So you just want more certainty. I know what you're dealing with. You want more speed in the EPA to tell you what you have to do? Is that right?

Ms. FEOLE. No, that's not exactly what I'm saying. I would say more that I would like to see the RCRA and the CERCLA programs, when they are trying to effectuate the same thing, which is the cleanup of an area—I would like them to be heading in the same directions or giving the same sort of advice, or at least know that you're going to have to satisfy the same sort of requirements for both the programs.

Senator BAUCUS. So you're saying that your biggest frustration is the different regulations that instruct you under Superfund on one hand, and RCRA on the other, basically, waste cleanup and waste disposal? Is that right?

Ms. FEOLE. Right. When you have a situation where both of them will apply.

Senator BAUCUS. Yes.

Mr. PFLUG. Dale Pflug, Biotrol.

At the base of the problem, lies in EPA's consideration of the remediation strategies. Is it a permanent remedy or is it a containment remedy? Their charter as presented by Congress is a commitment to use permanent remedies on site when they are practicable. In fact, what's happening in the RIFS process today is that these remedies are being considered too casually by the EPA, versus having to show a reason why the technology isn't practicable and therefore the selected remedy omitted. EPA must learn to distinguish between acceptable levels of risk and unacceptable risks if this technology is to have any hope of practical application.

Senator BAUCUS. Well, there is a massive bureaucratic reluctance—I think it's a human nature reluctance—to try something new.

You seem to make a lot of sense, frankly, and I just get the sense you're trying to come up with a different alternative. It makes good sense here.

Go ahead.

Mr. PFLUG. Continuing another thought, too, in dealing with systems where the contaminant is excavated, treated on-site and then returned back into place, the residuals still—even though they're treated, even though they're detoxified—still fall under the listing requirement, and we still have to go through a delisting process. So even though the technology works, we're still helpless in trying to get the technology practically applied.

Senator BAUCUS. Okay. You all heard what each other said. What do you expect EPA to say when I ask them, what about it? What are they going to say?

I'll bring them up and ask them, I guess. They're going to get their chance.

Mr. JONES. If I was in their position, I might be inclined to remark that I feel a little bit pressured by Congress, and maybe a little bit of a lack of guidance at the same time in terms of specifically being mandated to go out and give these newer technologies equal consideration on a scientific and engineering basis, not to worry if they do that right in terms of litigation that EPA has been exposed to in the past as the result of some unusual management they've had internally, and that kind of thing. If I was EPA, that would be my comment on that.

Senator BAUCUS. Anybody else have a thought as to what they're going to say?

Mr. JONES. They're going to say we're wonderful people.

Mr. PFLUG. Dale Pflug, Biotrol. They're going to describe the RIFS process is, identify the alternatives and then present the alternatives which represents the least risk to the EPA for selection.

Senator BAUCUS. I'm sorry, I didn't understand that. What was that?

Mr. PFLUG. What are all the alternatives available for remediation? Under the RIFS process, they study containment and redisposal alternatives through the remedial investigation and don't get down to treatability considerations until the feasibility study phase. This is too late in the process. That needs to be pressed much harder. Get into the remedial investigation; press for treatability at that point. Press for reasons why it can't be treated verses defaulting to the old traditional remedies.

Senator BAUCUS. I hesitate to get into this, but is it any kind of a funding problem or staffing problem, do you think, with EPA? Do they need a little more money? Of course they think so, but do you think so? I mean, everybody thinks they need more money. I'm just curious as to what your honest guess on that is.

Mr. DRATZ. Edward Dratz, MDI. This Agency for Toxic Substances and Disease Registry which has been organized for about two years now is charged with figuring out the human health hazards, and that's really the core of all this, but they're rather a latecomer in the field. And I think the crucial part of the puzzle is "how clean is clean" and so forth, and yet they're totally swamped. I've called them six times in the last six months and their officials aren't available. They don't return phone calls. Either there's a fundamental problem there, or they need more help.

Senator BAUCUS. They don't return phone calls?

Mr. DRATZ. No. And I've even met the people involved at a Superfund conference and had interesting discussion there, but they're just swamped, absolutely swamped. And either it's something more fundamental or they need more help, one or the other.

Senator **Baucus**. One other final question. How clean is clean? How clean should clean be? You're developing alternative technologies; how clean should clean be from your point of view?

Mr. **Dratz**. I could attempt to answer that. Edward Dratz from MDI.

What is necessary is better methods to measure human body burdens of these component. That is, are the components actually getting into people? And then other methods to assess if that is causing damage. Now, in the record I've got an outline of what might be done, and I can provide you some more information. I don't see that I can go into that in sufficient detail here, but I think there are clear-cut steps that could be taken to establish those——

Senator **Baucus**. Better methods to measure the degree to which——

Mr. **Dratz**. Better methods to measure the degree to which this stuff is in people, and is it causing damage to you or to me individually?

Senator **Baucus**. Is anybody doing that, looking at that? Who is?

Mr. **Dratz**. There is a field of study called epidemiology where you look at people who have lived near a site and people who haven't lived near a site, and then you compare their health and disease. Now, that's a pretty rough tool because some of those people living near a site have been exposed, perhaps, a lot, and some of them maybe not at all. So you're averaging over all those responses, and you should really try to figure out whether the people who have picked up the most of this stuff are the most affected, or the people picking up less being not affected. You really need a more defined study of methods for human body burden of toxins and their adverse effects on individuals, and it seems to me that this should be a real national priority at this point. It's not receiving the attention it needs. It's fundamental to all these considerations.

Senator **Baucus**. Anyone else have a thought on how clean clean should be?

Mr. **Pflug**. One of the things that's happening to the industry is the tremendous progress being made in instrumentation, in measurements. And until very recently, measurement of how things clean was the limits of detection. That's no longer true, and we're plagued by the fact that the limits of detection cannot be used as a standard. We've got to get the standards themselves.

Senator **Baucus**. You didn't answer the question, though, of how clean clean should be.

I understand the problem with detection. You can detect most anything these days. But I'm just trying to get some guidance as to how clean clean should be.

Mr. **Pflug**. Well, it varies, of course, according to the particular contaminant. Is it toxic or not? And it varies according to where it's located.

Dr. **Dollhopf**. In the plant and soil material we do have criteria we go by to set goals to clean to that level. So we feel that we know when soils are toxic and when plant materials are suitable and unsuitable, so there are criteria in those media.

Senator **Baucus**. Okay. Anybody else have anything they want to say?

[No response.]

I see a hand at the back. We'll get to you a little later; we've got the panel here. There will be a time for people in the audience to speak.

This is your only chance. Anything else you want to say? Is there something I didn't ask?

[No response.]

Okay. Thank you all very much for coming here.

The next panel will be Allen Fitzwater from BN Railroad; Arthur Wittich from SRM, Butte, and George Ochenski from the Montana Environmental Information Center.

Okay, let's begin. Please give your full name for the record.

STATEMENT OF BERNARD T. NOONAN, DIRECTOR OF ENVIRONMENTAL ENGINEERING, BURLINGTON NORTHERN RAILROAD CO., OVERLAND PARK, KS

Mr. **Noonan**. My name is Bernard Noonan. I'm the Director of Environmental Engineering for the Burlington Northern Railroad, and I'm substituting for Allen Fitzwater.

Burlington Northern is currently working with the EPA and with State environmental authorities on several waste cleanup sites. In addition, certain railroad shop activities generate EPA-listed hazardous wastes which we are also required to dispose of.

Our experience with disposing of hazardous waste has shown that there are a number of impediments to conventional off-site disposal. These impediments are likely to intensify in the near future. Off-site disposal costs have increased dramatically in the recent past. The dynamics of the waste disposal industry indicate that there may soon be a shortage of off-site disposal capacity. This shortage of capacity will put additional upward pressure on the costs of off-site disposal.

Construction of new off-site disposal facilities is impeded by a number of factors. The regulatory requirements which must be cleared to permit and construct a new facility add significant cost and delays, too, and thereby discourage entrepreneurial ventures. A more streamlined permitting process might provide more incentive to potential disposal facility operators.

Even if more off-site disposal capacity existed, off-site disposal is not always a cost-effective method. In rural areas, and particularly the western United States, the distance between cleanup sites and disposal sites often adds significantly to the costs of off-site disposal. In addition, the fact that waste generators which ship waste off-site to a disposal facility remain continuously liable for waste improperly handled at the disposal facility makes off-site disposal a less than ideal cleanup methodology.

Streamlining the relevant regulatory framework would greatly improve the waste management process. At present, the RCRA permitting process is tenuous and quite time-consuming. Conflicts often arise, not only between Federal and State regulatory standards, but also between different agencies within each level of Government. For example, a RCRA siting issue may involve the EPA, Bureau of Land Management, and Bureau of Indian Affairs regulatory standards.

Additional internal guidance from EPA on RCRA management issues, such as the TCLP test, a new method for determining the hazardous characteristics of waste, would also be helpful.

With regard to alternative and innovative cleanup technologies, we feel that on-site treatment of waste is a preferred technology due to both its cost-effectiveness and the generator's ability to retain control of the site and the wastes for which the generator is responsible. However, real difficulties exist in implementing the two on-site remediation technologies which are most applicable to BN's waste cleanups, bioremediation and thermal treatment.

BN has pioneered the use of biological treatment technologies, or bioremediation, for detoxification of hazardous wastes at our facilities. We have both EPA and State approvals for the operation of a bioremediation facility at a Superfund- and RCRA-regulated site in Minnesota. The technology has been proven to be technically and environmentally sound and cost-effective. We are concerned that if EPA, as directed by Congress, pursues the land disposal ban as presently defined, this treatment technology will no longer be available to us. Specifically, in the 1984 RCRA amendments, Congress directed EPA to proceed with a program to identify wastes that should be banned from land disposal. Unfortunately, biological, land-based treatment was listed as a land disposal technology, not a treatment technology. This safe and effective biological treatment method may now be subject to the land disposal ban. We have reason to believe that EPA does not want to ban this widely accepted and environmentally sound technology, and it believe that it was not the intention of Congress to ban waste treatment.

BN suggests that Congress give EPA a clear directive that biologically-based land treatment not be listed as a land disposal technology so that use of bioremediation can continue.

The permitting of mobile thermal treatment systems at RCRA sites is currently problematic. Under the current RCRA regulations, operators of these treatment systems are required to seek a separate permit for each facility. The permitting process is extremely time consuming and unpredictable, making long-term scheduling of a treatment system difficult. The EPA has made some progress in this regard by proposing regulations that would allow mobile treatment systems to operate under State-wide permits. Although this is a laudable first step, BN suggests that additional progress must be made in order to foster the widespread use of the technology. The TSCA system of national permits for mobile technologies is a recommended method of handling the permitting.

There is a strong need for enhanced use of alternative technologies, particularly for on-site treatment of wastes at RCRA-regulated sites. It should be noted that EPA's SITES program provides possibilities for technological innovation, but only Superfund sites are involved. BN suggests a similar program be designated for RCRA-regulated sites.

Particularly useful technologies at RCRA sites include bioremediation, stabilization and thermal treatment. These are all technologies which reduce waste toxicity, mobility and/or volume. It is precisely for those innovative technologies that RCRA permitting is most difficult and time-consuming. Indeed, by their very nature, alternative technologies which are process-related are often regulated by regulations which are not designed for the specific process involved. BN suggests that regulatory procedures be amended so that cost-effective, innovative treatment technologies are encouraged.

The EPA's proposed Part 264 Regulations, Subpart X, as they apply to bioremediation, stabilization and thermal treatment, can be a positive step toward advancing alternative technology. The key is in the permit writing. The permit writer must be given guidance and good discretion so that the permitting process does not result in endless requests for information.

BN recommends that Congress readdress the issue of the definition of land disposal. By definition, land treatment has been included as in the land disposal ban. In doing so, Congress is discarding a proven technology which could be effectively regulated and permitted under Subpart X.

We would like to once again commend this subcommittee for recognizing the potential for improving the existing hazardous waste treatment and disposal process. Thank you for the opportunity to present this testimony.

Senator Baucus. Thank you very much, Bernie.

Next is Arthur Wittich. Arthur.

STATEMENT OF ARTHUR WITTICH, STAFF ATTORNEY, MONTANA POWER CO., REPRESENTING SPECIAL RESOURCE MANAGEMENT, INC.

Mr. Wittich. Mr. Chairman, my name is Art Wittich. I'm a staff attorney with the Montana Power Company, and I appear today on behalf of Special Resource Management, Inc., a wholly-owned subsidiary of the power company.

SRM is a Montana corporation providing waste generator services, transportation and remedial site work to customers in the Northern Great Plains and Rocky Mountain regions. We appreciate the opportunity to comment at this oversight hearing on RCRA and the reauthorization of the 1984 amendments to RCRA. As you requested, my testimony today concerns the present status of RCRA, impediments to RCRA and opportunities for improving RCRA.

As to the status of RCRA, it is, as enacted and amended, one of the most important and valuable pieces of environmental legislation existing today. In conjunction with CERCLA and SARA, RCRA is a major step forward in protecting human health and the environment.

However, due to the revolutionary nature of RCRA—and part of that is its sweeping scope in regulating not only large but small businesses for the first time as far as environmental legislation is concerned, and its long-overdue prohibition against the improper disposal of wastes—improvements could and should be made to ensure the timely and successful implementation of the spirit of RCRA, especially as it pertains to the unique problems in the rural west.

As was its original intent, RCRA should be part of the solution in achieving the safe management of hazardous waste by encouraging those companies that position themselves as part of the solution. Changing RCRA to require responsive regulation will benefit not only the waste management companies but also the generating community and ultimately the public at large.

As for the impediments of RCRA, the first is the costly and time-consuming permit process. It simply needs to be streamlined. Granted, there are risks associated with hazardous waste management; however, there are also risks associated with the lack of permitted treatment, storage and disposal facilities, or TSDs, and the disposal capacity they provide. This lack of capacity is not caused by a lack of treatment and disposal technology, but is instead attributable to the difficult RCRA permit process. In addition, these capacity problems are being exacerbated by the banning of land disposal alternatives.

Presently, no permitted TSD facility exists in Montana. Therefore, the transportation of hazardous waste out of State, and often region, is necessary. Even though demonstrated disposal methods for certain wastes would be profitable in the region, companies are hesitant to site such facilities or invest in alternative technologies due to the multi-year permitting process.

There are many possible solutions to this current problem. Statutory time limits could be imposed on the various levels of review. Construction of facilities could be allowed to begin before the final permit is issued. Financial assistance could be given to impacted communities to minimize local opposition. Finally, the use of alternative treatment and disposal technologies could be encouraged, as explained below.

Costly transportation to distant permitted TSD facilities causes a geographic disadvantage to waste generators in the west. Alternative technologies previously discussed in this hearing, therefore, are especially well suited to the unique problems in the west.

The EPA's recognition of these "miscellaneous units" in their Notice of Proposed Rulemaking dated November 7, 1986 sends a positive signal. On-site treatment and mobile technologies do not operate like traditional facilities. Therefore, the permitting and regulation of these alternative technologies should also differ so as to encourage their use.

Related to the use of alternative technologies is the concept of recycling. RCRA, as the title proclaims, was originally intended to promote resource recovery. Along with encouraging alternative technologies for disposal, the Federal Government should place a renewed emphasis on recycling technologies. This emphasis should include research and development efforts, such as streamlining the permitting of recycling facilities, including using the "permit by rule" mechanism. This effort would not only reduce the demand for disposal capacity, but also promote the reuse of resources.

As concerns the third impediment, inconsistent regulation among States should be preempted. The "not in my back yard" syndrome is alive and well in the less-populated west. This syndrome has led to legislation and ordinances imposing unnecessary burdens on the Federal scheme. While Government control at the nearest level is usually preferable, hazardous waste management is a national problem requiring Federal solutions. We've been griping about the Federal Government at this hearing so far, and they have a lot of problems; at the same time, though, I think there are even more problems once it gets to the State and local level as far as the management and regulation of hazardous wastes are concerned.

Even though the interstate transportation of wastes is necessary, roadblocks have been established. State and local regulations have, by law or de facto, prohibited waste disposal methods in compliance with Federal regulation. These prohibitions include prevention of siting by voter approval; excessive "tipping fees," and burdensome licensing requirements. While more stringent State regulation is acceptable, and to be expected, consistency with Federal regulation is crucial for efficient waste management.

Even though Montana regulation is more stringent than Federal law, it is fortunately consistent with Federal law. This consistency, however, is not due to Federal preemption but by the exhibition of good judgment by State legislators and administrators. A bill introduced during the 50th Montana Legislature is a good point in point.

House Bill 789, as originally drafted, would have required a permit for transportation centers that hold waste that hold waste for less than 10 days. Such a permit requirement was explicitly rejected by the EPA. Although EPA did say that there was some room for regulatory standards, they opposed the permit requirement. After considerable debate, House Bill 789 was amended so as to require regulatory—but not permit—requirements on transportation facilities. House Bill 789 is now enroute to the Governor for his signature.

Even though House Bill 789 was correctly amended, the desire by certain individuals to impose as many burdens as possible on the safe management of hazardous waste points to the need for Federal preemption. Consistency is essential to the regulated community in the west, and yet still achieves the objectives of the protection of human health and the environment.

In closing, the removal of the above impediments would lay the groundwork for future opportunities to improve RCRA. The development of an efficient waste management infrastructure to meet present and future generators' needs is essential to the economic well-being and growth of the west. Promoting efficient and cost-effective treatment and disposal of hazardous waste also promotes the protection of human health and the environment. Needless to say, encouraging safe and efficient disposal alternatives consequently discourages the use of illegal alternatives by the regulated community.

Waste management professionals in the private sector stand poised to achieve the goals of RCRA, but the assistance and cooperation by the various Government agencies is essential for this goal to be achieved.

Again, thank you for the opportunity to comment at this hearing. I would be happy to answer any questions.

Senator BAUCUS. Next is George Ochenski. George.

STATEMENT OF GEORGE OCHENSKI, THE MONTANA ENVIRONMENTAL INFORMATION CENTER

Mr. OCHENSKI. Mr. Chairman, for the record, my name is George Ochenski and I represent the Montana Environmental Information Center. I thank you for the opportunity to present this testimony and supporting documentation today.

I have been active in hazardous waste issues in Montana since our first site was listed on the National Priorities List. I served as chairman of the Anaconda-Deerlodge County Environmental Advisory Council during the first three years of operations on the smelter Superfund site and worked with citizen groups on the Milltown Dam Superfund site. I have successfully lobbied hazardous waste legislation before the Montana Legislature for the past two sessions.

While Montana is primarily a rural State, we deal with many types of hazardous wastes. Mining, agriculture, oil and gas development, and the production and disposal of the commodities of modern life all produce wastes that we are only recently beginning to address in a comprehensive manner. Our major uncontrolled hazardous waste sites reflect our primary industries and their "boom" eras. I am glad to say that most of Montana's current laws are designed with an "ounce of prevention" philosophy to prevent future waste sites from occurring. However, there are some loopholes in the current Federal statutes that need to be addressed.

Our current legislative session saw the introduction and successful passage of HB 789, a bill to regulate hazardous waste collection and transfer facilities. Under current Federal law, facilities that store wastes on site for less than 10 days are exempt from regulation as hazardous waste storage facilities. The need for HB 789 was driven by the actions of a company that specifically applied for the 10-day exemption to avoid regulation. Their entire collection and transfer scenario is designed to have wastes in their facility for less than 10 days.

The problem with the exemption is that regardless of the fact that drum A of waste XYZ comes in one door and leaves via another 10 days later, the facility itself maintains a constant supply of wastes on-site. The concerns of leaks, spills, fire, security, containment, prevention of environmental contamination and human health and safety are as valid for a 10-day facility as they are for a longer-term storage facility. Yet, 10-day facilities are exempted and 11-day facilities must secure an operating permit and come under strict regulation. Exemptions of this kind are simply not warranted nor defensible.

We managed to successfully pass HB 789 into law, but it was not without the unavoidable struggle that occurs when States exceed Federal regulations.

Similarly, the use of hazardous reagents by miners is an issue that begs attention. Unfortunately, a bill to address the use of cyanide and other toxic reagents by small miners did not pass the Montana Senate this session. While large mining operations that use hazardous reagents are required to obtain operating permits, post bonds for environmental damages and reclamation, small miners are exempted. Currently, mining States are experiencing increased use of heap-leach extraction methods, and the threat to groundwater is serious and must be addressed at the Federal level.

As to CERCLA, while my experiences with Superfund span a number of years, they have not all been satisfactory. By and large, the CERCLA program has improved dramatically since the early days of the Burford/LaVelle debacle. As CERCLA matures, it is becoming more flexible, more adaptable to local needs and site-specific remedies. A perfect example is the necessity of an on-site monitor at the Anaconda Smelter during its demolition. CERCLA does not mandate on-site monitors of Superfund sites. Yet, because buildings were being torn down and salvaged, toxic dusts were blowing in the wind, and inadequate storage facilities were being constructed, the citizens of Anaconda requested an on-site monitor of all operations. Initially, our requests were denied by the EPA. With your help, Mr. Chairman, as well as other members of Montana's Congressional delegation, we obtained a monitor. The result was the curtailment of the widespread dissemination of severely polluted salvage materials, the control of fugitive emissions, and the inspection and redesign of faulty storage facilities.

CERCLA needs this flexibility to achieve the program goals. The issue of "special wastes," for instance, holds critical interest for Montanans. While it is true that mining in general produces wastes with low-level toxicity, it is also true that the industry produces massive amounts of those wastes. It is low-level waste that has turned Butte into a Superfund site, the Clark Fork River into an industrial sewer, and forced the replacement of all wells and plumbing in Milltown because of arsenic pollution of aquifers.

While one cubic yard of tailings may hold only marginal amounts of arsenic, lead, cadmium and copper, what are the effects of 10 square miles of tailings, such as at Anaconda? Or of the 6.5 million tons of toxic sediments behind the Milltown Dam? Obviously, low-level wastes can poison, maim and kill. They can economically cripple a community as well as a river. This happens by destroying property values and putting people on hold while the responsible parties and the EPA thrash out a complex investigation and mitigation plan.

The Montana Environmental Information Center has opposed the use of the RCRA standards to designate what constitutes wastes under CERCLA, and we would do so again. CERCLA must look at the results of the wastes, not just the composition of the wastes themselves.

Similarly, CERCLA must move forward to ascertain the danger and implement the remedy in a more timely fashion. While the foundation of CERCLA is the legal leverage of treble costs for responsible parties that refuse to undertake the cleanup of the wastes they created, the legal considerations in building the kind of case that can force a $100 million to $400 million cleanup are serious impediments to progress.

How will these legal considerations affect the use of innovative technologies? It is one thing to say, "let's give it a try," but another thing to collect from a responsible party for the costs of experimentation. Not the least of many concerns is the subsequent exclusion of the public to information regarding CERCLA investigations. I speak from experience, Mr. Chairman, not conjecture, when I tell you that the staff of our local EPA office gets real nervous about releasing information concerning Superfund site investigations. Yet, who has a greater right to know what poisons are in the immediate vicinity than the citizen who lives there?

It is a problem that has not yet been satisfactorily worked out at the Federal level, and it creates confusion and apprehension throughout the ranks. Obviously if the legal staff in Denver decides, carte blanche, that information on groundwater contamination by arsenic is essential to their case, and that release of such information might possibly help a responsible party to "beat the rap," they will issue a directive that such material be withheld from the public. The public trust, however, is at stake. Because of the scandal during the early days of CERCLA, and because of the general fear and perhaps misperceptions concerning hazardous wastes, every effort must be made to work with the public, to keep them involved and trusting, and to seek their input on appropriate and satisfactory levels of cleanup.

As to RCRA, Montana's primary concerns under RCRA are landfarming of petroleum wastes and the exemptions for mining wastes. Both areas need further investigation. MEIC wishes to go on record requesting that the regulated or exempted industries, as well as the public and public interest organizations, be brought into a series of hearings to address the problems with current laws in expectation of the reauthorization of RCRA.

Thank you for your kind attention. I would like to submit, as an addendum, this report that was put together by the Environmental Quality Council on hazardous substances in the Montana environment and its status, and a legislative overview of what we used to address them.[1]

Senator BAUCUS. Good. I appreciate that, George. Thank you.

Let me just start out with a general question for all of you, and that's a question I asked the first panel. How clean should clean be? Your gut guess, just your feel about it?

Mr. NOONAN. My opinion is that it should be looked at at the TCLP level that they talk about when they quantify hazardous waste. Certainly, there is some background justification for the levels that the EPA sets when they establish what is or what is not hazardous waste, and the TCLP method that they're working on right now shows some promise in terms of defining what a hazardous waste is, and that ought to be the limit that you look at. And then, in some instances, balance that out with particular site requirements that may change that.

Senator BAUCUS. Art?

Mr. WITTICH. It's a difficult question. I would just add that there has to be some balancing mechanism. You not only want to protect human health and the environment, but something—we have to get off this kick of just studying things ad nauseam. If there really is a human health problem there, then action should be taken rather than the multi-year studies and intellectual thrashing-out. I lived in Butte. If there's a problem in Butte with the tailings, something should be done, and soon. That's all I would answer.

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[1] The materials referred to have been retained in Committee files.

Senator BAUCUS. Are you saying that we're trying to hard to get the perfect solution, and therefore we're not getting solutions.

Mr. WITTICH. I don't think there is a perfect solution. I think that no matter what we do—there has been an effect already on the environment and we have to try to clean it up. We will never get it to the state it was before there was an impact, but cleanup should be initiated in a more timely manner.

Senator BAUCUS. George, is there a perfect solution?

Mr. OCHENSKI. Is there a perfect solution? I don't know if there's a perfect solution. I think each case of "how clean is clean" needs to be weighed on a site-by-site basis, particularly when you deal, as we do here in Montana, with cases where you have more than one major pollutant of concern. For the EPA, for instance, to say that a certain level of arsenic in drinking water is acceptable, that deals with arsenic; but how does it deal with arsenic, lead, cadmium and copper, all at that level, all at the same time? It's the same with the fish in the Clark Fork. While the fish in the Clark Fork may have an acceptable level of arsenic in their tissues, they also have PCB; they also have PCP; they have copper; they have cadmium; they have lead. So how clean is clean? And what part does synergy play in clean? If we have only a single pollutant, then probably the levels that we have established are fairly reasonable for dealing with that, although as we look back——

Senator BAUCUS. Let me ask the question differently. Some people tell me that the cleanup is just too slow, that it's just being studied too much. People tell me they want to clean it up, they want to get on with it instead of just trying to get—if not perfect—an almost perfect solution instead of studying it so much. Do you think there's any merit in that point of view? A lot of folks in Butte say that to me; sure, we want to clean it up, we want to get on with it, but let's not keep studying the doggoned thing that long.

Mr. OCHENSKI. I reference that in my testimony about the fact that the CERCLA process, the Superfund process, the foundation of it is a lawsuit, is litigation, is treble damages for responsible parties. Because of that, because of the very way the program is put together and the law works, there are certain limiting factors to how fast we can go.

Now, the EPA has to hold a $100 million or $400 million cleanup price tag over top of Arco. They don't want to make mistakes. They can't have a case that's full of holes or Arco will walk out that door and say, "We're not cleaning it up and we know you're not going to bust us because you don't have a good enough case." That's pretty straightforward. I mean, I'd like to see the cleanups move faster, too, and I've worked with EPA for a number of years now on Superfund sites, trying to say, let's go faster. But we always come right back to the legal staff in Denver saying, we can't move faster until we have bombproof evidence that these pollutants are causing these damages and these levels of cleanup will suffice.

Senator BAUCUS. Art, do you have any reaction to that? The speed with which EPA got involved the Butte cleanup? It's not really your bag quite directly, I know.

Mr. WITTICH. Speaking as an attorney, I think that there is some merit before somebody is tagged with a multi-million dollar cleanup that all those costs are justified. And speaking as someone who represents industry, I agree that there should be sufficient evidence before you tag somebody for a cleanup. However, I think there could be some changes made that would expedite the litigative process.

Senator BAUCUS. What might those changes be? I was thinking of that. Maybe the law should be changed to help those EPA attorneys get not quite so nervous. Should there be changes to speed this thing along?

Mr. WITTICH. Maybe EPA could initiate the cleanup without necessarily imposing treble damages at the end. Initiate the cleanup; that would give you a better picture of how much problem there actually was, after you cleaned it up, and then be able to go against the companies at that time. I think a lot of times companies are hesitant to give in to a certain type of cleanup because they think there's a better way to do it, yet they are somewhat forced into the mechanism for fear of treble damages.

Senator BAUCUS. You say "a better way." Do you mean a less costly way?

Mr. WITTICH. A less costly way, a different way.

Senator BAUCUS. But with the same degree of cleanup?

Mr. WITTICH. I think so.

Senator BAUCUS. Bernie—all of you—talked a little bit about the unique problems in the west, the distances and transporting the hazardous waste to a certain disposal site, for example. Could you just expand on that? What are some of the unique characteristics of the west that you've seen in your experience that are perhaps not true in the other parts of the country that we should certainly focus on, at least that this committee should focus on?

Mr. NOONAN. Certainly, the distance to disposal sites is a real problem. The sites that we have in the State of Montana, for the most part we send them to the State of Washington or Oregon, close to the coast, and also there are some wastes that go to the mid-west. There just aren't disposal sites, and the cost of transportation is difficult. In our case, we have a transportation facility close-by, a mode of transportation. The railroad transports——

Senator BAUCUS. So basically, it's the distance? It's the cost, and also there's the greater danger of an accident, I suppose, too.

Mr. NOONAN. It's also the actual unit cost of transportation. The railroad provides cost-effective modes of transportation, but it's limited to where it can be picked up. Truckers have a greater advantage in that, and they do take advantage of the cost.

Senator BAUCUS. Art, do you have any view on that?

Mr. WITTICH. I think it's all related to the fact that it's difficult to get a permit. That means that there are very few TSDs. For us, there are Oregon, Washington, Utah, Idaho, Texas, Colorado; therefore, transportation is needed. I think that that points to the need for innovative technologies, on-site treatment, mobile technologies, where, say in Montana, a lot of times you don't have large generation of waste. And mobile technologies might be better suited than to pick it up and take it all the way to Colorado or to Texas.

Senator BAUCUS. I'm sorry, you said it would be better suited?

Mr. WITTICH. It definitely would be, to be able to have on-site and mobile technologies to go to generators that don't necessarily produce enough to justify shipping it thousands of miles.

Senator BAUCUS. I see. Right. Yes.

What about that, George? Should there be in situ treatment?

Mr. OCHENSKI. In situ treatment? Yes, that's a good idea. That works pretty good. I think the west, our biggest difference from the rest of the Nation is the nature of the wastes that we produce, the nature of our basic industries here. Mining wastes. Massive quantities of low-level wastes, and obviously, you're not going to ship those. We could use some bioremediation, microbes that treat tailings piles and eat metal.

Senator BAUCUS. What about other forms, like, for example, wood preservatives? Dry-cleaning wastes? Service station wastes? All those small generator kinds of wastes? There's a lot of other kinds of wastes that are generated in this State in addition to mining. Is it the Environmental Information Center's view that, yes, makes sense to try to develop the alternative technologies for treatment in this State? Or is it the Environmental Information Center's view that, no, "it's not in my back yard" and we should ship them out, get them out of here?

Mr. OCHENSKI. No, I don't think we have any delusions about "not in my back yard, no wastes in Montana." We have plenty here already. I think the goal—and I think we're making progress towards that goal—is the reduction of wastes at the source. Art said that in his testimony, and that's where we're headed. It's economically driven primarily right now because of all these things you're hearing about how much it costs to ship it, what a pain it is to get a permit. People are going to be moving further and further away from processes that create waste that must be shipped. And because of that we will see, I'm very confident, a great reduction in the amount of waste we generate in the next 10 years in the Nation as a whole and in Montana, too.

And so rather than say, "let's move a bunch of waste sites here and encourage people to continue to produce waste," I don't think the attitude of "not in my back yard" is intentionally making people generate less waste; but certainly, that's one of the beneficial side effects of making it hard to site them.

Senator BAUCUS. Art, why not have a permit if you hold waste for 10 days?

Mr. WITTICH. I think it relates to your last question. There is a unique set of circumstances out west where transportation is essential. Quick movement of waste is also essential. For somebody—especially small-quantity generators—to have to get a storage facility permit, which is in effect what George would want us to do, can be a multi-year process. While this is happening, the only alternative to a transportation company, such as SRM, is to literally drive between every generator and pick it up, do a zig-zag, and then go down; whereas if we have a hub facility, which is what we're operating at Billings, it makes transportation easier.

Senator BAUCUS. What if a permit would take so long to get?

Mr. WITTICH. What if it would take so long to get? It would be much——

Senator BAUCUS. It sounds like your problem is more the length of time to get a permit——

Mr. WITTICH. You bet.

Senator BAUCUS [continuing]. Than it is the philosophical objection to having a process in place to handle the waste when it is temporarily at a storage site.

Mr. WITTICH. It's very difficult from a management perspective to hold waste only 10 days.

Senator BAUCUS. What would happen if you went to EPA and said, we want a permit?

Mr. WITTICH. What if we went to them?

Senator BAUCUS. Yes.

Mr. WITTICH. I think that we have talked to them because we are also exploring the possibilities of a fully-integrated TSD facility. It's a long process.

Senator BAUCUS. What takes it so long?

Mr. WITTICH. I think, there again, the studies. You have to do a lot of background analysis of the area.

Senator BAUCUS. Are they dragging their heels? Should it take so long, or should it not take so long?

Mr. WITTICH. If I was living in the community where it was going to be sited, I'd probably say it should take as long as it is. From a business perspective, I think there are ways to reduce the time.

Senator BAUCUS. But implied in that second-to-last statement that you made is, yes, the stuff is dangerous enough, so you have to be that sure before you issue the permit. That's from the public's point of view. Did I accurately infer what you are, in effect, saying?

Mr. WITTICH. It's a manageable problem. And yes, there are risks associated with it; there's no doubt about that. At the same time, though, looking at the big picture, there are risks associated with the system that we have now, and that is that it's a very difficult prospect of getting the waste from the generator to a safe disposal facility.

Senator BAUCUS. So generally, from the public's point of view, you think that the time it takes is not too long?

Mr. WITTICH. I think it takes too long, and I think from the company's perspective it takes too long.

Senator BAUCUS. How long does it take, and how long do you think it should take?

Mr. WITTICH. I've heard circumstances of it taking three, four-plus years. I think that that should be able to be reduced to one or two years. I think a full season, and then a season to do the analysis of the background data acquisitioned from that season.

Senator BAUCUS. I was curious to hear you say that you prefer Federal as opposed to State regulation in this area. I would think that, since Montana Power operates basically in Montana, that, my gosh, the Montana situation is a little different from some other part of the country. But you'd want the State——

Mr. WITTICH. I think this is a unique set of circumstances. I agree that regulation at the nearest level is the optimum way except in a situation like this, where it is an interstate—first of all, SRM is an interstate business; but second of all, the nature of getting from point A to point B is interstate in nature, and to have local roadblocks put up in between the way, it just does not allow for an efficient means.

In California, if you generate it in California you dispose of it in California. The same with the larger States back east. But out here, we don't—each State doesn't necessarily generate enough waste to justify the TSD facility.

Senator BAUCUS. Under the law, do the States assume regulation over a period of time if they want to, or is it automatically transferred to the States over a period of time?

Mr. WITTICH. They have to take positive steps to have the program assumed by the State.

Senator BAUCUS. Is the State of Montana moving in that direction?

Mr. WITTICH. Montana has its own recognized State program. Idaho does not, and is trying to achieve that. So right now, EPA is the lead agency on this.

Senator BAUCUS. It's your hope or your wish, though, that the State would not move in that direction?

Mr. WITTICH. No, I think there should be State regulators in charge of programs. I think however, though, that there should be consistent regulation of the program among these States. I think that's possible by having lead State agencies.

Senator BAUCUS. Is there anything that anybody on the first panel said that you want to react to?

[No response.]

Nothing else to say?

Okay. Thank you all very much. I appreciate it.

All right; we will begin the final panel. The Governor's plane has landed. He is on his way, but because of the 11:30 restriction that we have, we'll begin the next panel. And when the Governor arrives, I'll have to impose upon the panelists to forbear so that the Governor can give his statement, and then we'll continue on after that.

So the next panelists are Roger Thorvilson, Department of State Lands, State of Montana; Robert Duprey from the EPA, Denver; and Gary Amestoy of Montana State Lands.

[Recess.]

Senator BAUCUS. We are honored today to have the Governor of the State of Montana, Governor Ted Schwinden, who has very kindly taken the time out of his schedule—I don't know of anybody who has a busier schedule than he—to come here to give his views and those of the State on RCRA generally, and more specifically, some of the State aspects of RCRA in the disposal of hazardous wastes.

Governor, we're happy to have you here. We appreciate you coming.

STATEMENT OF HON. TED SCHWINDEN, GOVERNOR, STATE OF MONTANA

Governor SCHWINDEN. Let me begin, Senator Baucus, by thanking you for bringing this subcommittee to what we characterize in Montana as a part of the rural west, to learn better for the Congress how those of us in Montana are coping with what clearly is one of the more important pieces of environmental legislation that Congress has passed in recent years. I am talking, of course, about the treatment, storage and disposal of hazardous waste. And what I'm going to do, Max, if I may, is try to paraphrase to save your time and that of your audience, to allow everyone an opportunity to present. I've submitted my statement for the record.

Senator BAUCUS. Governor, if you took the time to come here, you can take as long as you want. Don't worry about it.

Governor SCHWINDEN. Well, fortunately or unfortunately, I have a noon commitment at the Yellowstone Kiwanis in Billings which I should meet.

I think there may be a tendency on the part of some to dismiss, or at least to minimize, the kinds of hazardous waste problems that our State has, Senator, as trivial when you compare them to those of the urban east and places like Pittsburgh or New Jersey, or in the west in the Los Angeles Basin. But despite our deserved reputation for our unsullied landscapes and—for most of our State, at least—a near pristine air and water situation, the fact is that Montana does have its share of hazardous waste problems. I would cite as examples more than 100 abandoned refinery sites in this State that have left a legacy of spillage that is now contaminating groundwater in parts of Montana. Best known, of course, is the impact of a century of mining and smelting in the Butte-Anaconda-Clark Fork area that have left a series of Superfund sites that rank among the most important in the entire country. You are very familiar with the "post and pole" or the tie-treating plants that continue to also make news as sources of contamination of our groundwater.

I don't intend today to speak on the extent of environmental damage or the seriousness of the health hazards that such problems represent because the gentlemen that were just seated here at the table as I walked in are the experts who could speak to those kinds of hazards. Instead, what I'd like to do is to talk briefly and to focus on how our State and its people are implementing the growing list of laws and regulations that affect how hazardous substances are controlled.

As you well know, because you've cooperated very closely with the Administration as we've tried to integrate the changing Federal laws in areas like the Federal Strip Mining Act or the Resource and Recovery Reclamation Act, RCRA, that we have developed State programs to put into place to implement those kinds of laws, and to do it in a way which minimizes potential conflict with Federal authority. Because of the 1984 changes in RCRA, facilities that generate in excess of 220 pounds of hazardous waste in a month must comply with the new handling, storage, transportation and disposal requirements. The changes also established new standards for the municipal landfills that receive waste from the small-quantity generators that may not meet that 220 pound limit.

Very clearly, a lot of Montanans are impacted by the 1984 changes. Folks like those in the commercial pesticide business, our garages, our paint stores, our printers, dry cleaners, agricultural folks and others are now faced with what clearly is an added expense for the disposal of their wastes. Moreover, because of potential liability problems, many of the county landfills are now reluctant to accept any hazardous waste, including waste from those who generate less than 220 pounds.

Senator, I still remain confident that our State and Federal agencies have the technical know-how to administer the new laws and regulations. I am not as confident of the ability of government to sell those new programs to a population that is increasingly wary of any kinds of new governmental regulation. Recognizing that problem of making the programs work with public acceptance, we've taken a number of steps in the State that we hope will at least minimize the potential for confrontation. Working with the local Chambers of Commerce around the State of Montana, our State Department of Health and Environmental Sciences has been and is conducting training sessions to try to explain on-site to small generators how the recent RCRA changes apply to them and how they can respond to them.

Our Department of Health last year contracted a feasibility study of the various hazardous waste management options that were open to Montana. That study recommended that a transfer storage facility be constructed with State funds, but that it be operated by the private sector. However, as you know, there are already private operators in Montana who have indicated a willingness to both construct and to operate a collection system, and I feel—and continue to feel—that they ought to be given the opportunity to demonstrate, to prove that the private sector can indeed provide disposal services to all generators at a fair price. If the private sector fails in that responsibility and obligation, then I think it's clear that the State could and should advertise for bids to construct and operate a facility here in Montana.

Over the next biennium, some $212,000 in State monies will be used to help businesses minimize or eliminate the hazardous waste that they generate.

Finally, under the title III legislation approved last year, Congress mandated but did not fund major State and local responsibilities in chemical emergency planning and community right-to-know. Later this week I intend to establish a State Emergency Response Commission pursuant to that legislation to designate local emergency planning districts, and also to appoint and supervise the planning committees with each one of the districts around the State.

We had, I think, a healthy debate over the whole issue of public versus private operation of a collection transfer station in Montana, and from that discussion I certainly recognize—and I'm sure our small-quantity generators recognize—that conventional disposal can be expensive. The price tag could run anywhere, I think, from $60 to $800 a drum. Given that kind of cost, I see a critical need to develop some alternative technologies, alternatives that, number one, are cheaper, but number two, still meet the RCRA goal of making land disposal the method of last, and not first, resort.

I was encouraged—and perhaps you've seen a copy—to receive a letter from an automobile dealer in Billings who said that, working with the State Department of Health, he has purchased a solvent recycler that takes care of his waste solvent and eliminates the need to pay for disposal. I think equally encouraging, the refineries in the Billings area are working on a demonstration project that involves the land treatment of petroleum wastes via some type of biological breakdown of the waste material. There are similar projects underway now for degradation of wood-treating wastes.

From an efficiency and cost savings standpoint, State administration of hazardous waste regulations is preferable, I believe, to Federal control. But in saying that, I think it's important that I recognize, and that we recognize, the EPA as really an indispensable partner in achieving our goals. The scientific research that EPA conducts in areas of alternative technology, in product substitution, and perhaps most importantly in the area of waste minimization, is realistically beyond most budgets. And if this is indeed, as it is, a national problem, then we ought to be coordinating all research in one area, and EPA is logical. Time and again, EPA's findings and their translation into new technology allow the States to implement effective, defensible statutes and regulations.

EPA, for example, has effectively demonstrated a new technology for chemically destroying dioxins from contaminated groundwater at the Montana Pole Superfund site near Butte. That technology, demonstrated at the former wood-treating facility, can now be applied at similar sites across this country.

I certainly don't have to remind you, Senator, that we are now in our fourth year of Superfund efforts in the Butte, Anaconda and Milltown areas. While we've had some cleanup, such as the dismantling of the Anaconda smelter, Superfund efforts at the other sites are still in the study phase. After some four years, the public—and, I assume, elected leaders, too—are becoming increasingly skeptical of Government's ability to produce results. By becoming so cautious, so careful in our attempts to build a legal case regarding the extent of damages and their health effects, I think we are opening ourselves to the charge that Government would rather colonize a problem than solve it.

The maintenance of long-term citizen support, which I believe is essential to the successful implementation of any program, I think is going to require quicker assessment of what constitutes an acceptable health risk. And it's my understanding that CERCLA reauthorization also encourages industry and Government to negotiate viable cleanup options. That's a direction that I strongly support.

Senator, I am also concerned about recent EPA actions to develop what is characterized as a "non-coal mining waste program" under Subtitle D of RCRA. As Gary Amestoy, who was seated here a few minutes ago, will testify later, we already have in our State an effective hard rock reclamation program that is designed to protect our air and water quality, both during and after mining. I applaud the former EPA Regional Director, John Welles' creation of the mining waste forum that he used to seek answers to such potential conflicts between State and Federal authority. Clearly, the EPA needs input from States, from the mining industry and from environmental organizations before it begins to draft regulations to regulate non-coal mining waste, and our State certainly intends to remain an active participant in that forum.

Last year, the former Administrator from Denver, John Welles, said that "The major way we get the job done in Region 8 is through partnerships with the States," and I would add as an aside that John Welles was a singular success in doing that, a tremendously credible Administrator. While recognizing that that cooperative approach is not always easy, John Welles expressed a philosophy that I wholeheartedly endorse to conclude my comments today: "Better than anything else we know, given good communication and good will, partnership works." We're going to need that partnership as we work to resolve what is certainly one of the most difficult problems that faces this country today, and that's the responsible treatment and handling of our hazardous wastes and toxic substances that we have created in the past and will clearly create in the future. Thank you very much for the opportunity to testify.

Senator BAUCUS. Thank you very much, Governor.

Let me first serve you up the softball.

Governor SCHWINDEN. That would be a welcome change, Senator, from Helena.

Senator BAUCUS. But you're not in Helena now.

In your judgment, and the judgment of the State of Montana, what should the Federal Government—whether it is EPA, the Congress, or whatever—be doing more of under Superfund or RCRA from the State's point of view? You talked about the partnership, and I sense that it's been fairly good, but if you were to recommend some different approaches or changes or emphasis of EPA and/or the Executive Branch and the Congress to undertake with respect to hazardous waste disposal and cleanup, what would it be?

Governor SCHWINDEN. Let me highlight two areas. One, I'm sure you expect, and it's not a hardball answer; it's the perennial complaint of local governments about the State and the States about the Federal Government, where new responsibilities are shifted to States for the implementation of programs and so forth, that the funding mechanisms go along with that. I mean, it's the old dollar issue. But perhaps more importantly in the long run, I guess my first experience when I was Director of the Department of State Lands in dealing with cooperative enforcement of similar legislation in mining, the old 201 regs, the 3000 regs and so forth, is for Congress, to the extent that it's practical, to establish within its laws the framework that not only encourages but really mandates cooperation so that we don't have parallel implementation of statutes. Neither the Federal Government nor the States can afford not to cooperate, but you and I also appreciate the propensity of governmental units to protect turf, to try to isolate their authority, and I think there are some singular successes that we have had in the coal teams that were put together under leasing. I think the implementation of the Northwest Power Planning Act, which involves the States directly on a citizen basis in the assessment of power needs and setting out power needs for the future—to the extent that it's possible without forfeiting the preemptive authority of the Federal Government, to ensure that we work as closely together in dovetailing EPA or OSM or whatever the appropriate Federal regulatory agency is, with its State counterpart, because——

Senator BAUCUS. The best examples; you say the coal leasing is one?

Governor SCHWINDEN. I think coal leasing was one. I think the Power Planning Act is another. And certainly, there are differences in different regions in the country, but to my knowledge the first joint EIS that was ever done between the Federal and State agencies was the Dexter-Burney Study, which was a joint State-Federal EIS. Montana has had a leadership role in those kinds of activities, and wherever possible——

Senator BAUCUS. Another example is the Flathead Basin.

Governor SCHWINDEN. Flathead Basin. And I believe that the Clark Fork effort that we have coordinated out of the Governor's Office offers that same kind of opportunity to make sure that, in a time of constrained monetary and personnel resources, that we make sure that we don't have four different units—or three—corporate, in terms of a mining company; State; Federal, and sometimes local—and I would mention the oil well out here in Bridget Canyon.

Senator BAUCUS. What is the State doing? You made a very good point about the public getting a little dissatisfied with the delays around here. You know, Idaho Pole here in Bozeman is a problem under Superfund that has gotten people stirred up, and should. What are some of the actions the State has taken to speed things up a little bit here? Are there some examples? You mentioned the need, and I agree with the need.

Governor SCHWINDEN. Well, it's easier to point back to the days of prohibition and make the argument that a law which is not accepted by the public ultimately will fail. I don't think we have that situation in the area of environmental regulation, but in the specific terms of what we've done at the State level, when I was made aware of the RCRA changes and the impact it would have on the State I asked the Department of Health and Environmental Sciences to work with—and they ultimately contracted with—the State Department of Commerce, because I think you and I both know, and I'm sure the Members of Congress know, that to have a business organization explaining new responsibilities to a local businessman or businesswoman probably sells measurably better than to have a governmental employee from any level saying, this is what we're going to require you to do under penalty of fine or imprisonment, and that sort of thing. It may not make the ultimate result any easier, but it may make it more palatable.

Senator BAUCUS. Are there some examples? I was just curious.

Governor SCHWINDEN. Well, the best one I know of, at least so far, is that we have not been inundated with letters of protest over the new RCRA regs and the 220-lb. small generator issue. And I think in part, that's due to the educational effort that has gone on and what I hope is a persuasive effort to convince local businesses that if we can find a way so that they can dispose of the waste on site at minimal cost, we would work with them to assure that would happen. I think that is an area where we have tried to reduce the level of anticipated hostility because nobody likes to be told that you've got to put it in a barrel and you've got to put a sticker on it and you've got to fill out a manifest, and then you've got to write out a check for $200 or $500 or $800; and if you don't have a lab sample that's accurate, you'll hear from the ultimate disposal site. I mean, to the extent that we can reduce that cost or the possibility of confrontation, I think everyone is better off.

Senator BAUCUS. I was tempted to talk about the cooperation between the legislature and the Governor, but I won't get into that.

Thank you very much, Governor. I appreciate it.

Okay, the final panel, now. Let's begin with Bob Duprey. How many people with you?

Mr. DUPREY. I have these three people; I'll introduce them.

Senator BAUCUS. Are all four of you going to testify?

Mr. DUPREY. No, just me.

Senator BAUCUS. Okay.

STATEMENT OF ROBERT L. DUPREY, DIRECTOR, WASTE MANAGEMENT DIVISION, REGION VIII, ENVIRONMENTAL PROTECTION AGENCY

Mr. DUPREY. Senator Baucus, thank you very much for inviting EPA to this hearing. I am Bob Duprey; I am Director of the Waste Management Division for EPA Region VIII, which is located in Denver, Colorado. This region includes six States in the Rocky Mountain western part of the United States, including the State of Montana.

I have with me today several people from the EPA. I'll start at the far end. John Wardell, who is director of our Montana office which we have up in Helena, Montana. It's the only State office we have in our region because of the remoteness of Montana, from Denver, and the number of issues that we have in this State and the interest in this State to deal with environmental problems. We do have an office here, and I think it's one reason why we feel pretty good about our partnership and our relationship with the State of Montana.

Rob Walline is in the Regional Office, in charge of our mining waste effort in the region, and he's also on special detail to our national program to work on development of mining waste regulations under RCRA.

Clyde Dyle is the Director of the Alternate Technology Division of our national program at the Cincinnati Hazardous Waste Engineering Laboratory, and I'm really delighted that he could join us from the region to be here today on this important subject.

Very briefly, I will summarize my testimony out of interest for time.

Basically, we have two programs that are of interest here. The first is the Superfund program that I'll briefly touch on.

Under Superfund, our main interest in the innovative technology and alternate technology area comes through the SITE program, and it's one that is really just getting going. We currently have 11 projects that are active, and we have a new solicitation. The second solicitation just closed on March 13th, and there are 22 new applications. You've heard about some of these this morning.

The Superfund amendments which were enacted last fall, in Section 121(e) of that act, specifically exempt both emergency response removal actions and long-term remedial actions from having to get Federal, State and local permits for on-site actions conducted totally on-site. Now, the effect of this amendment we haven't really seen entirely. It was just enacted last fall, but we think this will open the way to speedier resolution of some of these innovative techniques.

Another new amendment is Section 121 of the Superfund Amendments and Reauthorization Act, which specifically requires that remedial actions utilize permanent solutions and alternate treatment technologies to the maximum extent practicable. So whereas I think a lot of the criticism of Superfund in former years, of being oriented toward containment techniques and traditional methods is quite valid, the new amendments that were enacted last fall are going to result, we think, in a major change in direction. Also, we believe there will be a major increase in costs of cleaning up these sites, because we think that many of the alternate treatment techniques are going to be more expensive than simple containment. But, we also are going to more effectively deal with the waste more permanently.

The techniques that we will look at include reduction in toxicity of waste, the mobility of waste, and the volume of contaminants in the waste.

In the State of Montana we have demonstrated one technique already in working with our research program, and that was specifically done by the IT Corporation and Galson Research Corporation, which took a PCB method known as "KPEG treatment." It was modified. This particular technique doesn't have a discharge, and it treated the dioxin-contaminated waste at the Montana Pole site, and effectively reduced the level of dioxin to less than detectable levels. It's being modified now to look at treating soils at the same site, the Montana Pole site, for demonstration this summer; and this technique, once it's been demonstrated, would then be available at other sites throughout the country.

The way the site program works, different sites are used for different techniques that are available for demonstration. Once demonstrated the techniques then become available for use at other sites throughout the country. So basically we have one that we've tried out here in Montana, and there's another one that we're looking at in Colorado.

In terms of RCRA we have more problems procedurally in allowing the use of alternate technology. The statute is a bit older than Superfund and does not allow much flexibility in experimenting with new technology. It was amended in 1984, and Section 214 of HSWA provides for issuance of research, development and demonstration permits for innovative and experimental hazardous waste treatment technologies. The EPA Administrator is specifically authorized to expedite these permits, consistent with protecting the public health and the environment, and can waive permit application and issuance requirements except for those requirements related to financial responsibility and public participation.

Nationally, we've had some 39 RD&D permit applications that have come in. Six have been withdrawn. Four have been issued, and the average time of the permit processing is around eight months. That compares to approximately two years for a typical RCRA permit, so it is a bit more expeditious. Most of that time is taken up with the public review process, basically. You need prior notice of public comment; there is a 30-day requirement for prior notice. There is time needed to take the public comments, establish the record and deal with public concerns. It's been our experience in the region on the permits that we've had come in so far, that the public is generally very wary of these new techniques. They don't necessarily view this as a good idea, especially if it's labeled as an incinerator, and any thermal technique gets labeled by someone as an incinerator. If there's any kind of air emission or release from the system, if it's not a completely a recycling system, then we do get quite a bit of negative comment about the potential adverse effects that might occur from air emissions or from discharges from the facility.

In terms of earlier testimony today, we have also found that we have a problem in terms of allowing land treatment techniques. Currently, the interpretation of the HSWA amendments is that land treatment is included under land disposal as a land disposal technique, and in fact, it is some of both. It is both treatment and it is disposal. And if treatment works, of course, then you end up with a waste which has been effectively detoxified. If it doesn't work, then you end up with the potential for groundwater contamination and air emissions that are of concern.

Currently, we're finding in the region that we have something like 1,400 large-quantity generators, producing waste over 1,000 kilograms per month, and almost 1,700 small generators that came into the system under the new amendments, between 100 kilograms and 1,000 kilograms per month. We have 513 transporters of waste. There are 64 storage facilities, 67 land disposal facilities, and 2 separate incineration facilities. We're trying right now to complete the RCRA permits for land disposal by the November, 1988 deadline; 22 of these land disposal facilities have requested permits and want operating permits. We think that of those, around 11 will qualify to obtain a permit. The rest will need to go through closure, and we expect that they will be denied permits because of the problems at the facilities.

Out of these 11, seven of them are for land treatment systems in our region, so you can see that it's around 70 percent of the land disposal facilities in this region are land treatment oriented. So it's the major issue in terms of operating permits for RCRA in our region. In Montana there are four of these facilities.

We have a real problem on whether these are going to end up being permitted in the long run.

Senator BAUCUS. You say you have four of what in our State?

Mr. DUPREY. Four of the seven facilities that are seeking land treatment permits are in the State of Montana. They are Burlington Northern, the tie-treating plant at Paradise; the Conoco Landfarm at Billings; the Exxon refinery at Billings, and the Cenex refinery at Billings.

The difficulty is, the State can issue a permit now—and I'm sure we'll get into this a little more—but there's some issue on whether, under the land disposal ban provisions and the restrictions on wastes which are going to be allowed in land disposal, that this treatment would be an allowable thing to be done, even though it could be an effective way of treating and reducing the waste such that it is no longer hazardous.

Senator BAUCUS. I'm sorry, I missed that point—even though it may be effective, what's the impediment?

Mr. DUPREY. The problem is that it's considered land disposal, and under the land ban EPA is directed to prohibit waste from being land-disposed without treatment standards.

Now, the treatment standards—it may be possible through the treatment standards that are established to still allow it, but there are going to be some air emissions from volatiles that are in the refining waste. And there's a "no migration" requirement, both for groundwater and air releases, so there's still some issue on whether land treatment will be an acceptable practice after November of 1988.

Basically, I think a lot of the points that were made earlier are some very valid points in terms of the interest in speeding up the process and using alternate techniques and innovative techniques to deal with Superfund waste. EPA is moving in that direction very strongly. The Superfund amendments make a very strong case for more effective use of alternate techniques, and we do need to continue to find ways to speed up our process and to involve the States and companies that are dealing with waste in cooperative ventures so that we are less litigative and more oriented toward solving the problems up front. So there's no doubt in my mind that we need to focus on the kinds of issues that were brought out this morning.

Senator BAUCUS. We're a little pressed. I have to be out of this door here at a quarter of, I mean, walking out, so we have 20 minutes. For the remaining two, if you can hold it down to about four minutes, that gives me 12 minutes to ask questions.

STATEMENT OF DUANE ROBERTSON, CHIEF, SOLID AND HAZARDOUS WASTE BUREAU, STATE DEPARTMENT OF HEALTH, STATE OF MONTANA

Mr. ROBERTSON. My name is Duane Robertson. I'm Chief of the Solid and Hazardous Waste Bureau of the State Department of Health. I am pleased to be given the opportunity to reflect the department's views on hazardous waste management issues as they relate to our programs.

The major waste types produced in Montana reflect the State's rural character. Whether one looks at active generators of defined hazardous wastes in Montana or at the sites now being dealt with as CERCLA candidate sites, the trends are similar. Wastes associated with mining, milling and smelting operations, petroleum refinery wastes, wastes from the process of preserving wood products, and pesticides constitute the overriding majority of this State's hazardous waste problems.

In a typical year, petroleum refining and wood treating wastes account for greater than 90 percent of all the wastes reported by the regulated generators. Were mining wastes not currently exempted from RCRA, these would assume first or second place in the quantity figures.

With the change in exemption limits for small quantity generators recently implemented nationally, both the scope and the complexion of the RCRA program have been significantly affected. The number of businesses and Government entities impacted by the regulations has increased several-fold. More importantly, EPA and State regulators no longer deal primarily with large industrial companies and their professional environmental staffs, but now must apply the regulations to much smaller businesses. These small businesses not only must deal with the problems of understanding the highly complex hazardous waste regulations, but also face the challenge of accessing and dealing with hazardous waste companies which are 500 to 800 miles distant in more highly-populated areas.

The 1987 Legislature has proposed funding the department for special activities over the next biennium to foster waste minimization efforts by the hazardous waste generators. This funding decision reflects the pragmatic wisdom that the best, most effective, and least costly method of hazardous waste management is to find ways not to create it at all. Although waste minimization efforts can only go so far in the overall hazardous waste scheme, every dollar spent in such efforts will amply reward the waste generator in cost savings over the years. Creative, innovative waste minimization efforts by industry must be strenuously encouraged.

One of the new directives reflected in the 1984 amendments to RCRA, the emphasis on restricting land disposal of hazardous wastes, is of critical importance to hazardous waste management in Montana. A major portion of the hazardous waste generated by our oil refineries and wood treating operations is now being, or is proposed to be, managed by land treatment. This methodology relies on natural physical and microbiological properties of soil to effectively treat organic hazardous constituents of these wastes. The mechanism is at once both treatment of the waste and final disposal on the land. It is an important challenge to the EPA, the States, and the industry to evaluate land treatment of hazardous wastes critically and to determine if such methodology can meet the test of being fully "protective of human health and the environment for as long as the waste remains hazardous."

The EPA has begun steps to address the development of innovative technological approaches to waste management in its regulations for research, development and demonstration permits and in its proposed standards for miscellaneous waste management units in subpart X of 40 CFR Part 264. Congress and the EPA may well need to go further in this direction by accommodating mobile treatment technologies in the approach to permitting. The regulatory structure currently envisions that hazardous wastes will be brought to fixed locations for treatment and for disposal, but should be amended to address situations where the treatment unit, such as a mobile incinerator or mobile chemical detoxification unit, is brought to the site of waste generation. Permitting the mobile treatment process has already been addressed for PCB destruction under the Toxic Substances Control Act, and this approach should be adapted to RCRA.

Mr. ROBERTSON. Switching now to our agency's experience with the Federal Superfund program, the original Comprehensive Environmental Response Compensation and Liability Act contained provisions which tended to discourage use of innovative technologies. As a result, the mechanics of implementation developed by the EPA virtually ruled out the use of any approach or technology without a long-proven track record. Reauthorization of CERCLA contains some inducements to develop innovative technologies and has new requirements for permanent solutions which may force more diligent examination of new alternatives. While the legislative changes are encouraging, considerable effort will be required to adjust processes being employed to select corrective actions. Overall, innovative approaches have great possibilities when considering the hazardous contaminants at the Superfund sites in Montana. The process must be made more receptive to evaluating these approaches. Decision makers must accept some risk of failure when determining corrective actions at a site, and should remember that these problems, which developed over a considerable period of time, may take a number of years to remediate.

Thank you.

Senator BAUCUS. Thank you very much.

Gary, could you hold yourself down to two and a half?

STATEMENT OF GARY AMESTOY, ADMINISTRATOR, MONTANA DEPARTMENT OF STATE LANDS, HELENA, MT

Mr. AMESTOY. I will try to stick to it.

Senator, my name is Gary Amestoy. I'm the Administrator of the Reclamation Division of the Montana Department of State Lands. The department is the State regulatory authority for the administration of the State's mineland reclamation programs. This includes the Montana Strip and Underground Mine Reclamation Act, the Metal Mine Reclamation Act, the Open Cut Act, and the AML programs.

On behalf of the department I'd like to take this opportunity to make several comments regarding the Environmental Protection Agency's decision to promulgate rules for the regulation of non-coal mining wastes under Subtitle D of RCRA. F or brevity's sake I'll limit my comments to, one, the need for the development of a Federal regulatory program for non-coal mining wastes; two, the State and private sector involvement in the process, and three, Montana's recommendations for program development.

One, being the development of a non-coal mining waste regulatory program, the main issue that concerns Montana is EPA's ultimate goal in the development of a non-coal regulatory program. If the EPA develops a mine waste program similar to the other Federal mining programs that are already in effect, the end result could be another Surface Mining Control and Reclamation Act type program, which is totally unnecessary considering the extent of the non-coal mining waste issue in Montana. Based on our experience with SMCRA, we are concerned that this is where the EPA program is heading. Montana believes that this may be another SMCRA type program for the following reasons.

One, EPA is suggesting amending Subtitle D to provide for Federal inspection and oversight authority.

Two, EPA is considering the development of performance standards that all operations must meet.

Three, EPA is considering developing a program to determine the applicability of State programs and Federal funding for States.

Based on Montana's experience with SMCRA, these are the same parameters that are the foundation of a SMCRA-type program. Although EPA's intentions may be very innocent initially, we are concerned that the development of this regulatory program will snowball and become another SMCRA.

Montana believes that the development of another extensive Federal regulatory program is neither necessary nor wise to develop at this time. This type of program would result in too much duplication of effort on the State and Federal level, and the program would become too costly and time-consuming for effective administration. It is rather ironic that in 1987, the 10th anniversary of the passage of SMCRA, that no one that has been involved in the program—neither Federal nor State agencies, the coal industry, the environmental community, or the general public—can agree on the success or failure of SMCRA. I would think that in 10 years a program would have had more conclusive results.

The second item is State and private sector involvement. Montana is very concerned about the opportunity for significant input into the entire rule-making process. It appears that EPA has a predetermined agenda that they plan to implement regardless of State or public input. Montana first became concerned in late January 1986 when we learned that the EPA had sent a report to Congress discussing the promulgation of rules on non-coal mining wastes. We learned of the existence of the report in January of 1986, but it was not until late March that we were able to obtain even a photocopy of the report. Comments were due by no later than March 31, 1986. One would think that a document with so many potential long-term significant impacts to the State mining regulatory programs, State water quality, air quality, the mining industry and the environmental community would have been made more readily available to the State regulatory authorities and the private sector.

I have included in my testimony other examples documenting our concern about the opportunity for meaningful input into the rule-making process, and I'll just skip over those.

Item number three, Montana's recommendations——

Senator BAUCUS. You have one minute, precisely one minute.

Mr. AMESTOY. Okay.

Montana's recommendations for program development, we believe that EPA needs to specifically define the non-coal mining waste problem that needs to be solved. We believe that they should thoroughly document the actual need for the program.

Three, EPA should specifically identify what types of mining operations are being targeted—old sites, abandoned sites, or existing and new operations. They need to thoroughly inventory, review and evaluate all existing Federal and State programs.

There needs to be a very close coordinated effort. EPA also needs to consider what type of National Environmental Policy Act compliance will be required.

We would ask that, in the promulgation of the rules, that the rules be left flexible enough to consider site-specific criteria rather than trying to implement a broad-brush approach because there is no substitute for case-by-case evaluations.

If there is going to be Federal funding in these times of fiscal shortages, this is a very important issue.

In summary, we believe that if, in fact, a national program is necessary, that we would prefer to see it under Subtitle D, which is State or Regional Solid Waste Plans, as compared to Subtitle C.

The rest of my comments are in my written statement.

Senator BAUCUS. I apologize for holding you down there, but your statement will be in the record.

Gentlemen, and particularly those of you from the EPA, you heard me this morning ask some of the alternative technology folks what the most legitimate question you may have about them, and for them to respond to that. I'm going to ask the same of you.

First, what's the most legitimate point that the alternative technology folks have with respect to effectiveness of their technologies in complaining about EPA? In other words, what's the best argument they have under which technologies seem to be the most promising, and what are the best points they have from your point of view in addressing the effectiveness of alternative technologies?

Mr. DIAL. I'm Clyde Dial with the Cincinnati EPA Office of Research and Development.

I think one of the difficulties that we're faced with is trying to get comparativeness across different types of technologies——

Senator BAUCUS. Well, I'm asking for complaints or problems. I'm asking you, what are the most legitimate points they have?

Mr. DIAL. Well, we're finding that many of these technologies, in fact, do work. And I think that——

Senator BAUCUS. Which ones work?

Mr. DIAL. There are biological systems——

Senator BAUCUS. Which ones? I'm just curious.

Mr. DIAL. There are biological systems that are working on specific wastes——

Senator BAUCUS. Can you be more precise?

Mr. DIAL. Well, instead of company names, we have the white rot fungus, a system that is working well. There are bacterial systems that are working well. There are just a large number of these companies that have developed these processes—as we've investigated them, we are finding that they are working. The same is true of chemical detoxification techniques, and others of what I'll call innovative or emerging thermal techniques——

Senator BAUCUS. Bioremediation—is that working?

Mr. DIALL. Yes. That, for instance, is the land treatment technique for these refinery wastes. I think their legitimate complaint is to find a way around the possible regulatory hurdle in being able to permit that type of activity.

Senator BAUCUS. I'm not getting into that part yet. I'm just getting to the effectiveness of the technique.

Mr. DIAL. Yes, and it's also working on contaminated soils. As opposed to taking the waste and putting it in the soil and treating it, you have a contaminated soil, put in the bug there, and trying to solve——

Senator BAUCUS. Is it groundwater microbes you're talking about?

Mr. DIAL. Yes, that's correct.

Senator BAUCUS. And addressing only the question of effectiveness, you say that a lot of these technologies are effective?

Mr. DIAL. Yes. Unfortunately, it's very site-specific and pollutant specific, and actually matrix—and by matrix, I mean, where is the pollutant contained? Is it in soil? Is it in oil? All of those things have bearing on how well a particular organism will or will not work.

Senator BAUCUS. Okay.

You heard someone say, we just can't seem to get very far with EPA when we go to them. You know, there's a persistence with bureaucratic institutions in the problems that you mentioned, Bob, about——

Mr. DIAL. Permitting is a very difficult problem. It's even difficult for us; we have to get permits ourselves, and have the same difficulties getting them. It is time-consuming——

Senator BAUCUS. You have them?

Mr. DIAL. Yes, sir, we have permits. We have several permitted facilities.

And I think one of the other aspects is, it's different from a research standpoint versus an operational standpoint. There are a lot of constraints in terms of known performance and known cost-effectiveness when you get into the operational side. In the research side, we solicit periodically for people who would like to participate in that program——

Senator BAUCUS. That's true, but I suspect a bigger problem is the operational.

Mr. DIAL. I believe so.

Senator BAUCUS. What can we do about that? I sense, in listening to you, that there is a lot of promise in these technologies that are effective, but I sense a sort of—well, it's not bureaucratic, but maybe it's endemic to this country. We have a lot of R&D but we are very weak in this country generally in process technologies and commercialization. That's a big problem in this country. Maybe this is also true here in this particular area. I don't know.

How can we move? I mean, you've been around; how do we move along so that folks can put these technologies in place to clean them up, and the public rest more assured that the water and the air is a little safer?

Mr. DIAL. A classic case of a program that I think is going to be very effective to do that is the SITE program because there we're going to the real world, to an actual site. We're taking the technology. We're going to use it and prove the performance and the cost performance and the effectiveness of that technology.

Once that's done, then on the operational side, the people that are trying to make the decisions will have hard facts with respect to the actual accomplishment of that technology. Of course, that program is just beginning, but I think it's going to have a very marked impact on the acceptance of a lot of alternative technologies.

Senator BAUCUS. It was a major complaint that whether it's under RCRA or under Superfund, the permitting for the cleanup just isn't going fast enough.

Mr. DIAL. I don't really have an answer for that.

Senator BAUCUS. Bob?

Mr. DUPREY. Well, I think it will speed up in Superfund because now we have the exemption from having to get permits if it's an on-site action. We didn't have that before.

Senator BAUCUS. What are the biggest impediments to speedier cleanup, speedier permitting or whatever? What's the problem?

Mr. DUPREY. I think it's wanting to be certain, wanting to get the public input and acceptance in the community for what is going to be done.

Senator BAUCUS. Do you think it's appropriate to be certain?

Mr. DUPREY. I think we ought to be taking more risks, but the system hasn't been set up for that in the past. I think the new exemptions are going to make us take more risks than we have in the past.

Senator BAUCUS. Do you think that EPA should take more risks?

Mr. DUPREY. Yes.

Senator BAUCUS. All right. Do you think that, if EPA does take more risks, as near as you can determine, the public health is protected?

Mr. DUPREY. Oh, I think the public health will be protected. But, you know, there is sometimes a difference between protecting the public health and what the public perceives as being protection.

Senator BAUCUS. I'm asking you your own personal, professional view.

Mr. DUPREY. Yes, I do. I think that's the one thing we'll be certain to do, is make sure we meet appropriate cleanup standards.

Senator BAUCUS. What do you think EPA and/or industry or Congress can do to help the perception to meet the fact? The public perception to be close to what you think the actual level of protection of public health to be? What can we do about that? What does it take?

Mr. DUPREY. To some extent, it takes time in getting confidence that we're going to do some things and get some things cleaned up. And I think the work at Montana Pole, the use of that dioxin treatment technique is the kind of step that's starting to do that.

Senator BAUCUS. That's under Superfund, right?

Mr. DUPREY. Yes. And it's a removal action which was pre-SARA, pre-Superfund amendments, and we could do those without permits. Now we can do them for remedial actions, and that's going to make a big difference.

Senator BAUCUS. Is there any lesson there to carry over to RCRA?

Mr. DUPREY. Yes. I really think the idea of doing these RCRA RD&D permits, which in effect take a year, from the permit application through issuance takes a year to do, precludes the use of innovative techniques.

Senator BAUCUS. So you think if we take some of the process of Superfund and transfer it over, that might help?

Mr. DUPREY. I think it would help quite a bit.

Senator BAUCUS. I hear some people say that EPA doesn't care about waste minimization.

Mr. DUPREY. I don't agree.

Senator BAUCUS. What's the best example—give me a precise example of waste minimization that you've undertaken.

Mr. DIAL. There are a number of electroplaters, which are small businesses, that have changed their process and have effectively reduced, substantially, the amount of sludges and hazardous sludges that they're producing, not only in terms of an environmental savings but also a product savings, a cost savings in terms of doing business. We have done a series of case studies on those, and there are excellent examples. We are initiating or trying to get underway a waste minimization program.

I'm struck by what the Governor said because that is a very different approach that we've not taken in the past, and it's one that is beginning to take hold and I think has a lot of future because it eliminates the problem before it becomes one.

Senator BAUCUS. What can we do to find more incentives for waste minimization? I think that's a good approach, don't you?

Mr. DUPREY. It's a difficult thing because it's always company-specific. It's not generic in nature. You've got to look at the process, and typically—historically—EPA has not gotten into the process of a company and said, "make this change in this process for an environmental purpose." It's probably not appropriate that we do that.

Senator BAUCUS. Well, should we look at some incentives? Even though it's company-specific or waste-specific?

Mr. DUPREY. The Congress may have put the incentives in place, although they're not fully carried out, and that is the increasing cost of complying with the more stringent requirements, including the land ban, disposal restrictions for what goes in the land. These will take away the cheap alternative for disposal, and companies, we know, are reevaluating recycling and minimization methods because of the increasing costs of disposal. And that's a major incentive. It's just a marketplace effect of the increased costs of compliance with the regulations.

Senator BAUCUS. With the land bans, you mean?

Mr. DUPREY. Right.

Mr. DIAL. Could I make one comment about how to convince the public to accept these technologies?

Senator BAUCUS. Sure.

Mr. DIAL. I think it's got to be through examples of where we've had success and it's been in the field; it's not been in the lab somewhere, but it's been out in the real world, and those are beginning to happen. The agency internally is starting to develop data bases and clearinghouses for this so that the information gets spread quickly across all of our regions so that the regional people who are issuing permits or dealing with one of these sites can go in and find out what's been done in other places in a very timely manner.

Senator BAUCUS. Could you more specifically address the Idaho Pole cleanup here?

Mr. DUPREY. Very briefly, within a couple of weeks we're going to be getting some more information to define the extent of the contamination and come up with a recommendation for the drinking water problem.

Senator BAUCUS. Can you give us a deadline date?

Mr. DUPREY. Yes, within three weeks.

Senator BAUCUS. What will you get within three weeks?

Mr. DUPREY. We'll have a recommendation on what to do in terms of an alternate water supply for the affected homes.

Senator BAUCUS. For the homes? What about the longer term?

Mr. DUPREY. For the longer term, our problem right now is that we don't have funding in our region for doing the long-term remedial study. That one hasn't been funded. We've got a request in to our national office. If we get the funding, then we'll proceed this year.

Senator BAUCUS. Want some help?

Mr. DUPREY. Wouldn't hurt.

Senator BAUCUS. Okay. I thank you all very much; it's been very helpful, and I appreciate it. This is one of several hearings, so we'll be following up on a lot of this.

The record will be kept open for a week for those who want to supplement their testimony. Feel free to do so. Testimony can be submitted either to my office here in Bozeman or to my office in Washington, D.C.

I also want to thank our reporter, Marilyn, for her assistance here today, too.

Thank you all very much. I appreciate it.

[Whereupon, at 11:50 a.m., the subcommittee was adjourned.]

[Statements submitted for the record follow:]

PROBLEMS AND OPPORTUNITIES FOR ALTERNATIVE TECHNOLOGIES FOR THE TREATMENT OF HAZARDOUS WASTES

Testimony Presented to the Hazardous Waste and
Toxic Substances Subcommittee of the Committee
on Environment and Public Works

April 14, 1987

Presented to:

Senator Max Baucus, Chairman, Presiding

Presented by:

Peter M. Jones, President
Dr. Edward A. Dratz, Director of Research
MSI Detoxification Incorporated
Bozeman, Montana

INTRODUCTION

MSI Detoxification Incorporated ("MDI") is a relatively new small business which has been formed to develop alternative technologies to be applied in-situ to hazardous waste problems. MDI specializes in the high-resolution characterization of hazardous waste sites for the application of chemical or biological in-situ detoxification or destruction processes and in the rapid, effective development of such processes. MDI also provides a capability to integrate physical, chemical and biological technologies to ensure acceptable process rates and adequate toxic burden reduction. MDI has been structured to provide a complete range of on-site services to clients, including legal and regulatory services; site characterization; chemical analytical services; process (or processes) selection and development; process optimization, implementation and monitoring; economic analyses; and contract research. MDI's Bozeman, Montana based staff is currently concentrating on the development of site characterization technologies and on biological remediation process development for specific application in the Northwest.

MDI appreciates the opportunity to provide testimony at this hearing.

Subsequent witnesses will describe the enormous scale of the hazardous waste problems in this region and nationally. Inadequate hazardous waste disposal methods have led to extensive pollution of soils and surface and subsurface waters. Some of these problems can be remedied with conventional treatment methods, but, in general, most of these problems cannot be effectively or affordably remediated with methods currently in use. Furthermore, many of the methods currently in use do not detoxify offending compounds but rather bag them, bury them or attempt to otherwise confine them. Such "solutions" are not compatible with the goal of protection of human health and the environment or with the intent of current legislation.

Many innovative approaches to solving hazardous waste problems are in various stages of development, but very few of even the most promising approaches are being tried. MSI Detoxification Incorporated is a strong advocate for the creation of a climate in which innovative technologies, which will be required for effective solutions to hazardous waste problems, may be readily developed and implemented by those qualified individuals and firms who have a commitment to contribute to this field.

CURRENT APPROACHES

Current solutions to the problems addressed under CERCLA, RCRA and like legislation are demonstrably not effective. The current emphasis in the field on the implementation of traditional, "proven" technologies will at best entice the public to a false sense of comfort and at worst will make current environmental problems more intractable by disrupting otherwise stable systems. Throughout the current quixotic process, the American taxpayer will continue, directly or indirectly, to bear the burden of institutionally-induced inefficiencies and bias and will be called upon to support the process when cleanups must be repeatedly performed on sites where the application of current technologies has left significant residual contamination.

A key point to emphasize is that government agency policies do not facilitate the development and application of new technologies to environmental hazardous waste problems. There is a consensus that hazardous waste treatment should be carried out on site rather than transporting the wastes and burying or treating them at remote sites. Considering the magnitude of the problems and the limited effectiveness of current methods for the in-situ treatment and detoxification of hazardous wastes, the U. S. Government should be supporting a major research, development and demonstration effort in this crucial area.

Current experience indicates that the solution to hazardous waste problems on a site-by-site basis will, in most cases, require the integrated application of several technical approaches. The current environment, both within regulatory agencies and within the few large engineering firms that dominate the field, does not promote such technology integration: the bias remains with sledgehammer, decisively "low-tech" approaches. Additionally, there is little encouragement of research to support such technology integration. It is our experience at MDI, however, that these is no clear awareness that up-front investments in problem and solution understanding will markedly reduce the ultimate burden on the taxpayer and provide the most comprehensive and effective cleanup technologies.

Problems exist at all levels, yet many steps could be taken now to facilitate resolution of these environmental problems. Private companies face a long, hard road to funding the development of and gaining acceptance for innovative technologies in the hazardous waste field. The lack of "free-market" forces within the hazardous waste field, exacerbated by the dominant engineering companies with the support and direction of the regulatory agencies, creates unusually great impediments to the best technologies winning on a site-by-site basis.

The intent of the Congress, however, is that the most effective technologies, with regard to human health (CERCLA and RCRA) but without regard to cost (SARA), be those implemented: the costs and benefits to the people can only be optimized in an environment wherein all the relevant facts and opportunities are considered in the implementation of the permanent cleanup of hazardous wastes. If the Congress can impress upon the regulatory agencies that its intent is to effect permanent cleanup rather than simply to support palliative, ineffective "sound and fury" activities, the technology development climate will markedly improve as will the state of the environment. Additionally, the lack of clear interpretations of law on the part of the regulatory agencies, and the resultant continually shifting policies promulgated by these agencies, makes rational business planning extremely difficult and uncertain and tends to drive away exactly those innovators who could perhaps contribute most to the resolution of our environmental problems.

INNOVATIVE TECHNOLOGY DEVELOPMENT & DEMONSTRATION

An example of a program that might benefit from Congressional encouragement in this regard is the Superfund Innovative Technologies ("SITE") Program. This program is currently directed to providing Environmental Protection Agency validation of the performance characteristics of processes which have reached the field development stage. It is also directed to sponsoring the development of innovative technologies: MDI discussions with an EPA Headquarters-level director of this program indicate, however, that no funds will be programmed for this latter activity at this time or in the near future.

The key problem with the SITE program, in the absence of other programs which support demonstration developments, is that a major expense in process development is the scale-up of laboratory or bench-scale processes to field demonstrations. This cost factor will select for major corporations and against the entrepreneur or small company which may have a very valid technology to offer. This program also casts the EPA in the role of referee and thereby precludes the addition of EPA expertise to the development cycle of a process.

As mentioned earlier, current remedial investigations, feasibility studies and other activities in support of site remediation are dominated and controlled by a very small number of large contractors. These contractors are engineering companies and show little interest in considering innovative solutions. In fact, in a recent meeting with a project officer of a large REM contractor it was stated that they were dedicated to evaluating and using "the least innovative methods for site remediation." This position was supported by EPA contract management, which seems to direct a majority of funds to administrative matters and to sledgehammer approaches and programs no monies to understand why, for example, processes work in some contexts and fail in others, such knowledge being a necessary requirement to learning and progress.

MDI feels that such adherence to self-defeating short-term views is partially due to constraints placed by EPA management on field managers and, thereby, upon field project managers and engineers. The EPA seems to have a fear of committing funds for other than a-priori-proven remediation methods; this fear is transmitted to EPA support contractors. The key element in this problem is the lack of perspective: monies spent in understanding problems and solutions to the first sites dealt with may cause larger expenditures on these first few sites. The knowledge to be gained thereby, however, can be transferred to subsequent sites and to problems which will occur under RCRA and should significantly reduce the monies expended on subsequent sites. The Congress, however, is the authoritative body which must clearly demand that such an approach be taken, otherwise uncertainties, excessive costs and inadequate performance will continue to dominate a field characterized by an inability to invest resources in learning for the future. It may be appropriate for the Hazardous Waste and Toxic Substances Subcommittee to develop a policy which will ensure that the EPA understands the efficacy of remediation processes prior to process implementation on a site-specific basis, in a cost/benefit manner within the constraints of mandated cleanup levels.

Another related issue is the protection of innovative ideas and processes from the perspective of the small company or entrepreneur. MDI is aware of several procurements, sponsored by government agencies through major engineering firms and operators of government facilities ("centers"), under which ideas are solicited for research and development in this field. These same contractors are those referenced as dominating the hazardous waste field and are those who direct, and thereby bias, the approaches which will be considered for waste site remediation. They have a vested interest in perpetuating their involvement in this field and in directing its development toward areas in which they have expertise. This environment is not conducive to gaining the trust of entrepreneurs and small companies with insufficient resources to protect their ideas against misuse by major corporations or the government. An environment of trust could be more readily created if technology development proposal reviews were performed by third parties with no direct vested interest in the commercial benefits of the hazardous waste industry. EPA could fulfill such a function, for example, with a board comprising EPA staff in no way associated with in-house EPA hazardous waste technology development programs and external reviewers who have no vested interest in a site under consideration. Such external reviewers would be excluded from participation in remediation of the sites whose plans they review, and would be selected on that basis. MDI considers it very important to thus encourage small enterprises and individuals to participate in technology development and demonstration programs, as a variety of technologies will be required to effectively solve our hazardous waste problems.

TECHNICAL APPROACH

It is MDI's considered opinion that RCRA or SARA (CERCLA) problems should not be dealt with at the level of engineering solutions until we know more about the generic and site-specific problems that exist and about alternative methods which might be used for their resolution. There is a profound need to develop promising, innovative technology and to allow this technology to compete freely with other, conventional approaches. This will permit the development of the integrated solutions which are needed for waste minimization and on-site treatment of hazardous wastes.

The in-situ treatment of mixed hazardous wastes and wastes in complex substrates, such as soils and deep aquifers, is a problem which requires scientific understanding and solutions prior to the development and implementation of engineering approaches. There is a need, however, to shorten the long investigatory periods often associated with gaining scientific understanding. A way to facilitate the timely development of scientific understanding is to support the development of industry/university cooperative research programs.

Universities should not be in competition with the private sector for innovative process development, nor should government labs. Private enterprise has a vested interest in the timely and effective fielding of innovative processes, whereas universities and government institutions have a vested interest in performing basic studies. Interference in the free market process by the government frustrates private enterprise, denies industry's abilities to make sound business decisions, and erodes the technological and industrial base of the country. Universities have a critical capability and a critical role: basic research to support education and industrial developments. Generation of mutually beneficial university/industry relationships, with government support but without government interference, can markedly assist in solutions to the hazardous waste problem which providing the additional benefit of unfettered industrial support of educational institutions. MDI has, for example, developed a formal relationship with the Montana State University in Bozeman which is mutually beneficial and which permits a clear division of activities along the lines of institutional charters, interests, and capabilities. MDI would be pleased to discuss the nature of this contract more fully with Subcommittee members, as it may prove of use as a model to implement the suggestions of this paragraph.

LIABILITY ISSUES

An issue which we will not discuss in detail today but which is critical to the development of credible on-site hazardous waste treatments is that of liability. Current legislation leaves cleanup contractors exposed to unreasonable liabilities, particularly for cleanups not performed under contract to the EPA. Such exposure severely impedes the implementation of the solutions which the Congress demands. The cleanup contractor is in a position analogous to the cancer surgeon who does his best, under current practice, to excise a patient's tumor. If he succeeds, all is wonderful. If he fails, and malpractice can be demonstrated, he may be liable for payment of damages and punitive assessments developed against projected patient productivity and other losses. In the case of hazardous waste contractors, however, the doctor would be responsible for the patient's original tumor and all contributing errors associated with its incidence and development, and, if the patient lives, for all problems he has in the future without limitation. Clearly, society has contributed through product demand to our hazardous waste problems. Cleanup contractors should, therefore, be indemnified against liability for all causes less than intentional gross negligence.

An aspect of liability that MDI is concerned with, and which is particularly applicable to this region, is that of OSHA-mandated health and safety training for all personnel who will at any time be physically on a hazardous waste site. There is no clear definition of what constitutes adequate training under the OSHA regulation, only suggested guidance. Employers, private sector training enterprises, and the EPA are empowered to certify employees for on-site work, but there are no specifications as to what constitutes adequate training to protect personnel in an environment where toxicological effects in humans are not well understood, or to protect employers from retrospective lawsuits based on "certified" but inadequate training programs. Access to training is also an issue which may preclude certain otherwise highly qualified enterprises from contributing to hazardous waste solutions.

HEALTH ASSESSMENTS

There are several other fundamental problems with current RCRA and CERCLA programs. The overriding concern of environmental protection efforts is directed to safeguard people against health hazards. The goal of EPA activities, however, has been to determine levels of toxins in the environment; direct measurements of toxic effects on humans have, in general, not been attempted.

RCRA, unlike SARA, does not mandate the completion of health assessments in connection with corrective action cleanups. RCRA authorizes health assessments for sites that may pose a substantial risk to human health, but the authority to require such an assessment is discretionary, and the costs are borne exclusively by the government. The ability to provide true health assessments is hindered in either case by the current inability to precisely specify the toxic effects of specific substances on humans and the levels at which such substances exert their detrimental toxic effects.

The Agency for Toxic Substances and Disease Registry (ATSDR) is charged with determining hazards to human health, but they have not been measuring toxic effects on individuals directly. The question of "how clean is clean," which arises at every site, hinges on the health hazard issue; hence, it can never be resolved with confidence until the toxicology is understood. It is impossible, therefore, to reliably fix an appropriate degree of cleanup at this time. MDI urges that legislation be implemented to provide for a major research effort to (1) develop effective methods to assess human body burdens of toxic materials, (2) to correlate human body burdens of toxins with human health and disease, and (3) to develop rapid and inexpensive biological methods for screening toxicity of materials from waste sites.

People exposed to environmental toxins may respond differently to the insult: some may have a pronounced uptake of the toxins while others sequester lesser amounts, based generally on individual metabolic activity and capabilities. In some cases, therefore, the human health impact of specific toxins may be greatly exaggerated, while in others they may be underestimated or overlooked; in very few cases is the process truly understood.

CONTAMINANT ANALYSES

Another major problem in the hazardous waste field is that use of the most effective methods of analysis is not always permitted. For example, MDI applied for approval in the under the EPA Contract Laboratory Program ("CLP") in January of this year. This certification program required the analysis of "performance evaluation standards." In the process, we were shocked to find out that EPA insisted on the use of inferior analytical equipment for the analysis of organic contaminants.

A major instrument for the analysis of organic contaminants is called a mass spectrometer ("MS"); a preliminary separation of components is achieved through use of a gas chromatograph at the front end of the MS under this application ("GC/MS"). These instruments are built with various levels of performance capability. The highest-performance instruments provide a more accurate reporting of component identities and levels, but EPA methods demand use of a lower quality instrument which loses a large fraction of the molecules to be analyzed. Totally arbitrary tuning requirements must be met: these requirements have nothing to do with the accuracy or precision of the measurements. In this instance, our laboratory was prevented from utilizing a high-performance, high-cost mass spectrometer which would provide more reliable results than the EPA mandated instrument. MDI feels that EPA emphasis should be on results obtained and their supportability in a legal context and not so much on specific instrumentation to be utilized.

A similar example occurs under the EPA inorganic Contract Laboratory Program. A nitric acid/hydrogen peroxide method of extraction of metals is required which was originally designed for extraction from sludges high in organic material only. This method does not remove all the metals from most soil samples: nonetheless, the results are used to represent total metals. Other, more effective digestion methods are available but cannot be used for EPA analyses without an exhaustive contest.

EPA CLP-imposed limitations on the use of the most effective and appropriate analytical technologies again reduce the incentive for private industry to develop or use such methods. More importantly in the context of costs to society, use of inferior analytical methods may create loopholes in cost-recovery litigation and may provide erroneous estimates of the toxic-component burden of contaminated sites.

The CLP program is currently under serviced by commercial and government analytical laboratories. In our experience, this may be due to the ineffective communication of regulatory agencies with commercial suppliers of analytical services and to the way in which the CLP qualification program is managed.

In general, there are no clearly-defined, published EPA points-of-contact for various programs carried on by the EPA, at least to our knowledge. This makes it exceptionally difficult to obtain reliable and timely information about EPA-sponsored programs and to invest the resources necessary to be responsive to EPA needs. Responders may, therefore, be insufficiently prepared to respond to procurements and may contribute to the scarcity of contract labs.

EPA currently opens its CLP qualification program on an irregular basis, presumable based on current and anticipated needs. MDI would suggest that the CLP program could be facilitated by maintaining an open qualification program. The current "batch" program places an unnecessary burden on the EPA administration and elements supporting the evaluation process. This approach tends to discourage businesses which could qualify for the program if appropriate investments were made but which can not rationally invest given the current uncertainties in the program. Making this certification program more accessible to industry would greatly enhance the viability of the CLP and would provide for more reliable and timely analytical results.

MDI ALTERNATIVE TECHNOLOGY PROGRAMS

MDI has focused thus far on problems associated with the treatment of hazardous wastes. We believe the resolution of these problems will create great opportunity for the developers of innovative technologies to undertake such developments in a more reliable economic and regulatory environment.

MDI considers current hazardous waste problems to be very complex and not yet ready for strictly engineering solutions. This is particularly the case in the context of a problem defined by legislation and driven by human health and environmental protection concerns. MDI has, therefore, developed a full-service approach to serving clients with hazardous waste problems.

MDI provides legal services and utilizes these services to develop the boundaries and character of the legal and regulatory problems with which a client is faced. We feel that this is a critical first step in developing a permanent cleanup of hazardous waste sites.

The legal problem definition is developed and supported by MDI's comprehensive approach to site characterization. A part of the engineering solutions which MDI references elsewhere herein is site characterization based on the prospective assumption that remediation methods will be drawn from the small set of "proven" technologies currently in use. This "engineering" site characterization utilizes methods and equipment which have been developed for general civil engineering applications: very little of the equipment now in use for hazardous waste site characterization measures parameters which will need to be quantified to develop effective, controllable processes which will achieve acceptable decontamination levels.

MDI has an ongoing program of instrumentation, equipment and methods development which is directed at understanding hazardous waste problems at a more scientific level in the context of chemical, biological and/or physical in-situ remediation treatments. Other enterprises, some of whom have presented testimony here today, are undoubtedly pursuing programs of process-development-specific site sample characterization methods development. These necessary efforts by alternative technology developers can ultimately provide for better understanding and implementation of both innovative and traditional hazardous waste remediation processes.

MDI is currently developing biological hazardous waste remediation technologies. These developments are being pursued in the context of the overall problem presented at a hazardous waste site and in the context of currently available remediation technologies. For example, MDI is working to enhance naturally occurring or inducible biological solutions to acid mine drainage and mine spoils problems in Montana. Other companies presenting testimony today have discussed their biological process developments.

Biological technologies hold great promise for the remediation of hazardous waste problems and for the development of waste minimization or point-of-origin treatment processes. Microorganisms tie up metals, for example, through adsorption or ingestion: their use in leachate reduction programs in conjunction with other remediation technologies could be applicable to the Superfund sites in this region, which are characterized by large areal extent and heterogeneity. Microorganisms are also instrumental in the initiation of acid mine drainage: their control could lead to natural waste minimization for acid mine drainage problems. Microorganisms are a key part of the nutrient cycle which supports plant growth: MDI is initiating a program to develop integrated biological and chemical systems for application in revegetation programs.

The case of acidic heavy-metal-contaminated Superfund sites and abandoned mine lands provides an example of the need to do more than apply engineering solutions directly to the large sites characteristic of Montana. One standard approach to the remediation of mine lands involves applying chemical amendments to enhance the soil's capability to support plant (macrophyte) growth. The chemical amendments which have been suggested in some instances, and which include organic materials, may alter soil pH and help to render various metals insoluble, thereby reducing their leaching into ground waters and providing a source of organic material to favor the growth of microorganisms and plants.

A missing key element in this approach is a mechanism to develop an understanding of the factors necessary to generate a viable microbial community to support plant growth and to participate in metal immobilization. MDI has strongly suggested that such a mechanism be included in remediation process development activities. For reclamation techniques to be successful, an integrated application of chemical and biological (including microbiological) amendments must be developed. Soil microorganisms contribute to soil structural development, the synthesis of various plant nutrients through the mediation of various biogeochemical cycles, and amelioration of adverse chemical and physical limitations on macrophyte community development, such as extreme soil pH or toxic levels of heavy metals.

MDI will be contributing, through the application of its proprietary technologies, to the development of mined land reclamation processes in the state under a Superfund program and under a joint federal/state program. It is a credit to the initiative of several key individuals in a major engineering firm and in several state agencies that we will have this opportunity: as we indicate elsewhere, there are various institutional and emotional constraints that mitigate against any encroachment of innovative technologies and approaches on what is viewed as the domain solely of engineering solutions.

Microorganisms seem to be capable of degrading almost any molecule, including hazardous wastes. In mixed, naturally occurring cultures they seem to be able to survive and detoxify contaminated soils and aquifers. Much work must be done, however, to make biological processes generically applicable and readily transportable from site to site or within typical heterogeneous sites. Clearly, however, biological technologies cannot be looked to as a panacea for hazardous wastes. This is true for all known conventional and currently known innovative technologies.

For example, *in-situ* vitrification probably effectively treats those substances which are contained in the effective treatment volume. It is not clear, however, that substances do not migrate beyond the zone of treatment as a result of the treatment; nor is it clear that harmful intermediates are not formed that escape the treatment. The end product of treatment is not useful, and the energy requirements and kinetics of the process mitigate against its use on large sites. Other technologies have drawbacks as well, whether associated with effective depth of treatment, loss of contaminants to the air, introduction of reactive chemical species to the environment, generation of harmful intermediates and end products, or unacceptable process kinetics.

SUMMARY AND CONCLUSIONS

An integrated approach to the application of conventional and alternative technologies is clearly required. Concomitantly, effective methods for developing and screening such integrated approaches on a site-by-site basis are required. These developments will require government participation in funding and in implementation. To be effective, however, such programs would have to ensure a free-market, freely competitive environment in which enterprises could be more certain of an adequate return on investment. Such programs should markedly accelerate the development of acceptable solutions, in terms of process kinetics, effectiveness, reliability and cost.

The issue of substance toxicity to humans is of paramount importance to the mitigation of hazardous waste induced adverse health effects. Methods must be developed to adequately assess these toxic effects to provide for reliable maximum concentration limits. Closely related to this requirement, and vitally important for all aspects of hazardous waste remediation, is the requirement to utilize the best analytical methodologies available, to continue to develop improved methods, and to provide the flexibility required to introduce such improved methods rapidly.

In conclusion, MDI wishes to expressly state that references to engineering firms herein are not meant to comprise negative criticism. We have had the privilege to deal with several engineering firms in the region, and they have been supportive of innovative technologies within the constraints imposed upon them institutionally and by regulatory agencies. Similarly, our general experience with individuals in regulatory agencies has been very positive. Constraints exist, however, with respect to the presumed expectations of higher management, the Congress, and the public. It is imperative that those who are tasked with the solution to hazardous waste problems be explicitly given the responsibility and authority to develop and implement solutions. The approach of members of Congress recently as to clarification of the intent of legislation is very useful in this regard.

Testimony Presented by Cathy Feole for Ecova Corporation
to the Hazardous Waste and Toxic Substances Subcommittee
of the Committee on Environment and Public Works
United States Senate

April 14, 1987

Ecova Corporation presents the following testimony in support of innovative treatment technologies. The company is a full service hazardous waste management and treatment enterprise which is involved in the research and development of new treatment technology. Ecova would like to take this opportunity to state its position on hazardous waste treatment storage and disposal with emphasis on treatment technologies.

As a result of past waste management practices and current waste generation, the EPA, state agencies, and private industries are faced with the ongoing problem of adequate waste disposal. The problems with land disposal of waste have long been recognized and are explicitly addressed in recent regulations. Section 6902 of the Resource Conservation and Recovery Act (RCRA) specifically states as an objective the minimization of hazardous waste through treatment. Section 121 of the Superfund Amendments and Reauthorization Act (SARA) strongly recommends on-site treatment as a preferred cleanup option on NPL sites. Both regulations advocate programs for research, development, and demonstration of new technologies, and in the case of SARA, provides funds to be applied to research programs.

In light of recent regulatory developments restricting land disposal of various chemicals, research into alternative treatment technologies protective of human health and the environment must be vigorously pursued. Research into new technologies as well as innovative applications of existing technologies have been very promising. As a hazardous waste management company, Ecova is most interested in treatment technologies utilizing biological, physical and chemical treatment. Our experience thus far has shown great potential for bioremediation alone and in conjunction with other innovative treatment methods based on specific site conditions. We encourage EPA to promote the use of bioremediation as an accepted treatment method for NPL sites, RCRA corrective actions, and general hazardous waste management practices.

There are many advantages to using new technologies to treat hazardous waste. New and innovative methods can be cost effective, easier to implement, and in many cases more protective of the public health and environment than traditional disposal methods. On-site use of technologies will help solve the current landfill capacity problem, prevent possible releases from trucking waste through a state to a landfill and may cut future liability of landfilling certain wastes.

Bioremediation has been shown to decontaminate groundwater and soil, and has the potential to clean vapors under certain circumstances. Biologicals have been most effective on hydrocarbons, VOC's and other solvents. Research is currently being conducted on the biodegradation of other substances such as PCP, previously thought to be untreatable using this method. Use of bioremediation in conjunction with other treatment technologies is proving effective in cleaning sites with specific biodegradable and nonbiodegradable constituents.

Innovative uses of physical, chemical, and biological technologies can all be utilized in the treatment of hazardous waste. Some treatment programs will involve a combination of these processes. Activated sludge, aeration lagoons, trickling filters, composting and waste stabilization are examples of methods involving combination technologies. Set forth below are examples of innovative uses of bioremediation and other technologies in the treatment of waste.

In Situ Bioremediation Systems

In situ bioremediation of contaminated soil and groundwater involves enhancing the microbial degradation of surface and subsurface soil contamination and/or contaminated groundwater without excavation or removal of contaminated soils. Biological Treatment Systems (BTSs) are designed to be site-specific, but typically include one or more of the following:

1. Injection wells or recovery wells

2. Biological inoculum fermenter and feed system

3. Nutrient feed system

4. Oxygenation system

5. Chemical/biological additive control and feed system

6. Aboveground produced water treatment or soil washing systems, including bioreactors, clarifier, sludge drying system and final effluent polishing system

For startup purposes, naturally occurring organisms (microbial inoculum) will be manufactured on-site or at a fermentation production facility and then shipped to a site. After further acclimation in an on-site fermenter, the inoculum, nutrient and water are pumped into the soil and collected by recovery wells downgradient from the contaminant plume. A series of aeration wells maintain aerobic conditions along the path of the inoculum flow.

Soil Treatment

In a soil treatment bioremediation program, contaminated soil is excavated and transferred to an enclosed treatment location. Typically, soil is spread to a depth between 6 and 18 inches. An inoculum composed of microorganisms capable of biodegrading the soil contaminants is applied at regular intervals. Soil is tilled in order to bring microorganisms, contaminants, and oxygen into contact with each other. All three components of the microbial process must be present in proper amounts for biodegradation to take place effectively. The soil treatment unit is fully enclosed and properly lined to prevent migration of contaminants.

Physical and Chemical Technologies

Physical remediation is usually a more costly form of treatment and involves component separation techniques. Contaminated groundwater may be pumped to the surface and through filters to separate the constituents. The water may also be stored temporarily in treatment tanks where heavier contaminants settle to the bottom and lighter materials are skimmed from the surface. Other physical remediation methods include adsorption, air stripping and ion exchange functions.

Chemical remediation of soil and groundwater is normally used in conjunction with physical recovery methods. After wastes are brought to the surface and separated from groundwater the water is treated chemically before being returned to the aquifer. Chemical treatment includes pH adjustment, precipitation of contaminants through the addition of strong oxidizers or reducers, and neutralization of corrosive wastes. Some remediation programs will involve a combination of biological, physical and chemical processes.

Soil Washing Treatment Systems

One example of a system utilizing combination technology is soil washing. Soil washing systems which involve flushing the soil column, emulsifiers and assorted chemical additives are used to remove and condition target compounds contained in natural soils. The soil washing step yields a clean, nontoxic bulk material that can be left on the site or disposed of as a nonhazardous waste. The wash fluid is treated biologically, chemically or physically in further treatment steps to either destroy or reduce the volume of toxic compounds.

By innovatively using a combination of technologies, waste can be treated in a manner protective of human health and the environment. Ecova recently designed such a system which was totally enclosed, thus minimizing outside exposure to any contaminants. A structure was erected over a lined treatment area. The enclosure eliminated problems normally caused by rain or moisture and minimized exposure to emissions from the treatment area. From this experience, it is relevant that many new treatment technologies are in fact more protective of human health and the environment than existing treatment methods.

Development and use of innovative technologies, as described above, are essential components of an effective hazardous waste management strategy. Implementation of treatment technologies have many benefits. Specifically, bioremediation systems are cost effective, eliminate liability associated with land disposal, and protect the public health and environment.

Impediments to Management

Hazardous waste management objectives contained in many Federal and State regulations and policies specifically emphasize the need for new treatment technologies as an alternative to land disposal. Though the intent of the regulations is clear, the means to actually develop these technologies have not been clearly identified. To develop, test and use new technologies, many regulatory, institutional and perceptional hurdles must be overcome.

In order to conduct research on the treatment of hazardous waste, 40 CFR 270.65 currently requires a facility to be permitted. EPA guidance manuals on the permit procedure indicate that a permit is required for laboratory scale, bench-scale or pilot scale studies. Though certain RCRA requirements can be waived by the administrator, the process is essentially the same as for a treatment storage and disposal permit. The time frame for obtaining such a permit is realistically eight months minimum, and the permit term itself is one year maximum with the possibility of three renewals.

These regulatory requirements are problematic for research laboratories proposing to do a number of ever changing experiments on treatment technologies. To circumvent some of these requirements, synthetic materials are used on a small scale by many facilities throughout the United States. Residues from these experiments are a source of hazardous waste, and may present more of a problem than small-scale treatment experiments on existing waste material.

Research facilities are not always a part of a treatment storage or disposal facility. For these smaller research facilities, the current regulatory scheme is unduly prohibitive in that it prevents technology from being developed instead of ensuring that research is conducted in a safe and effective manner. The permit process is cumbersome, time consuming, and many times requires information applicable to TSD facilities and not laboratories. Furthermore, there are inconsistencies in application of the regulations between EPA headquarters, regions, and individual state programs. If research is to progress, permit application standards and procedures need to be clearly defined, application processing expedited, and the permit term extended to allow ongoing experimentation.

Though many state and federal policies are emphasizing the use of treatment, permitting requirements and operating standards to treat hazardous waste can be more expensive and time consuming than shipping waste to a landfill. Land disposal is currently one of the most popular and cost-effective means of hazardous waste management for waste generators. The recently proposed subpart X of Section 264, is a step forward in defining permitting standards and parameters. However, past experience with RCRA part B permits tend to make many owners and operators of treatment units leery of another cumbersome and uncertain permitting process. Owners of small or single unit treatment systems would be particularly affected by such a permit process. Land disposal will continue to be preferred over on-site treatment as long as the regulatory scheme remains uncertain and based on regional or state differences. To encourage on-site treatment, there must be incentives for owners and operators including an expedited permitting process that is consistently applied throughout the United States.

The impact of the land disposal regulations on some innovative technologies is notable. Land treatment of certain wastes are now prohibited even though this technology is effective for certain solvent waste. The trend is toward prohibition of all land treatment even if it may be the most appropriate cleanup option. The impact of this restriction is evidenced by the reconsideration of land treatment as a cleanup option at a number of NPL sites. In lieu of land treatment, many sites are now using only incineration. Since these sites are contaminated with low level organic material, bioremediation alone or in conjunction with incineration could be the best on-site technology. Properly designed and maintained land treatment units which limit migration are still a viable treatment alternative under controlled conditions. Ecova urges the reevaluation of the land treatment prohibitions and potential use under environmentally controlled conditions.

Institutional impediments have slowed the development and use of innovative technologies. Many agency personnel and cleanup contractors are unfamiliar with certain technologies that could be applicable for a RCRA corrective action or a Superfund cleanup effort. Unfamiliarity with new uses of bioremediation has caused it to be rejected as a cleanup alternative or not even considered, in the case of a Feasibility Study. It has been our experience that many persons associate bioremediation with past land farming efforts, many of which created current contamination problems. Also, the most well known type of bioremediation is land treatment, which is now restricted because of the land ban rules. It is important that agency personnel and technical consultants are aware that bioremediation is not limited to land treatment, and can be utilized in a variety of cleanup and treatment scenarios under Comprehensive Environmental Response Compensation and Liability Act (CERCLA) and RCRA. It is recommended that EPA personnel be exposed to more alternative treatment technologies through internal educational seminars, regular presentations by treatment companies and research groups, and visits to sites where treatment is being used or developed.

Many cleanups which can utilize alternative treatment technologies take place on Superfund sites which are also subject to regulation under RCRA. Cleanups under both regulatory programs have the same objectives, but different methods of implementation may be required. Cleanup levels often differ between programs, and the study objectives for Superfund sites are currently more exhaustive. Communication between EPA personnel from each of these programs is limited as evidenced by the divergent cleanup standards and study processes required by each group on the same sites or similar sites. It would be more effective if both the Superfund and RCRA programs promoted the same position on the issue of treatment technologies and cleanup levels to assure adequate waste management at any site where both CERCLA and RCRA are involved. It is essential that personnel from EPA headquarters, regions, and individual states begin dialogues so that cleanup decisions are consistent and regulatory programs under CERCLA and RCRA do not conflict.

To encourage a strong and effective hazardous waste management program we urge the Subcommittee to consider the following suggestions:

- o Expedite the permitting processes under RCRA to encourage on-site treatment of wastes
- o Provide incentives for on-site treatment of hazardous waste
- o Reevaluate land treatment restrictions
- o Assure that agency personnel and the public are aware of alternative technologies through seminars, presentations, and site visits
- o Require more interaction between the Superfund and RCRA programs to enhance effective on-site treatment of hazardous waste

Ecova wishes to thank the Hazardous Waste and Toxic Substances Subcommittee for the opportunity to present our position on innovative treatment technology. If the Subcommittee would like more detailed information on treatment systems using bioremediation, we would be happy to provide it upon request.

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RESEARCH NEEDS OF ACIDIC HEAVY METAL CONTAMINATED SUPERFUND SITES AND ABANDONED MINE LANDS IN MONTANA

By

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Problem Background

In the State of Montana there are nine CERCLA, or "Superfund" hazardous waste clean-up sites. Of these, five sites are directly related to historical mining, smelting and related activities. Some of these Superfund sites are among the most extensive in the entire nation. For example, the Silver Bow Creek/Clark Fork River site is approximately 130 miles long. The Anaconda tailings in the Deer Lodge Valley cover approximately 5,000 acres. In addition to the five mining related superfund sites, there are hundreds of abandoned hardrock, coal and bentonite mines throughout Montana that may be threatening the environment and health and safety of the nearby populace.

There appears to be a common denominator among the mining related superfund sites and various abandoned mine lands in Montana and throughout the western United States. This common link can be traced to a chemical reaction between the mineral pyrite and oxygen and water. During the mining process, whether it is a surface or underground operation, material is excavated and brought to the surface. Prior to mining, the ore and waste rock lies in a mostly oxygen-free environment. When these materials are brought to the surface during the mining process, they are subject to physical and chemical weathering in the presence of oxygen and water. If these materials contain sulfur-bearing minerals (e.g., pyrite) they are subject to acid production. It is well understood that pyrite, in the presence of oxygen and water, will react to form sulfuric acid.

This chemical reaction between pyrite, water and oxygen has resulted in thousands of acres of unusable and hazardous lands in Montana alone through the process of acid mine drainage and existence of acid minesoils or tailings deposits. To further exacerbate matters, the acidic medium, be it soil or water, allows for the liberation of otherwise insoluble heavy metals such as lead, zinc, copper and manganese. Some of the earthern materials moved during mining are by nature highly concentrated in metals (that is why they are being mined in the first place) and extreme environmental contamination can occur. Of prime importance is the leaching of heavy metals into ground-water resources, the erosion of heavy metal-laden mine waste into streams and lakes, fugitive dust containing metals, and contaminated soils which inhibit plant growth. Metal contaminants can enter the food chain through plant uptake of the metals from the soil. These plants can absorb excessive levels of metals, which are then available to wildlife and livestock as forage.

An example of these problems is present in the Silver Bow Creek streamside tailings deposits downstream from Butte, Montana. The flood-deposited tailings are extremely acidic and contain high concentrations of heavy metals. These heavy metal contaminants are easily leachable, due to the acidic conditions, and can move through the tailings into the ground-water supplies of the area. In addition, because of the acidic conditions and high metal levels, few plants are able to grow there. On dry and windy days, dust clouds can be seen originating from these barren tailings, creating instant air pollution hazards for the residents along Silver Bow Creek.

State-of-the-Art Remediation Techniques

In Montana where there are vast acreages of acidified, heavy-metal-laden tailings deposits, mine wastes and minesoils, the remediation technique by choice is usually centered around revegetation. Since the predominant land use in Montana is focused on agriculture, revegetation is a practical as well as economical alternative to conventional hazardous waste site clean-up technologies such as burial and removal. In order to establish a permanent vegetative cover on acidic, metal contaminated mine waste, it is neccessary to chemically neutralize the root zone prior to plant establishment. Amending soils with lime is commonly and successfully used to neutralize acidic agricultural soils on an annual basis. In order to reclaim acidic mine wastes to enhance revegetation or to inhibit acid mine drainage, liming has also been considered and used with varying degrees of success.

Liming is likely to be a necessary component of acidic mine-waste remediation at mining related Superfund sites throughout the Northwest. Once a stable vegetative community is established, the leaching of metals into ground-water resources is reduced or eliminated, erosion of contaminated materials into surface waters is controlled, and the blowing of metal-laden dust is reduced. However, before we can successfully revegetate these acidic materials we must refine traditional agricultural liming practices so they may be applied to more severe mining wastes.

Research Needs

There are several concerns with respect to liming acid mine wastes to provide a suitable, neutralized root zone. Some of the more apparent problems with liming acid mine materials include the lack of an adequate analytical procedure which will accurately predict the total lime requirement necessary to permanently neutralize the acid minesoil and prevent reacidification and revegetation failure. Research has been ongoing for a decade or more to determine an accurate, fast and economical laboratory method that can both predict potential acid production from unoxidized materials and determine a total one-time lime requirement that will prevent reacidification and revegetation failure. Montana State University is a leader in the research of acid minesoil reclamation here in Montana and in the entire western United States. This research must continue until an adequate lime requirement technique is developed and properly field tested with respect to various site-specific conditions.

Once an adequate lime rate is determined, it is then necessary to pick the proper lime agent. Agricultural grade limestone ground to a fine powder is commonly used. However, these materials can become cost prohibitive when considering the thousands of acres of acid mine waste in Montana alone. One interesting alternative to expensive agricultural grade lime is kiln dust, a cement industry waste product that has a very high neutralizing capacity and, more importantly, is available at low cost. This material has been successfully used in studies here in Montana to reclaim extremely acidic and toxic abandoned mine tailings and coal mine wastes. It is interesting to note that one industry's waste, kiln dust, can potentially be used to clean up another's environmenal pollution (mine waste).

Once a total lime rate has been determined and a lime agent has been selected, a new challenge presents itself. This challenge is centered around the mechanical incorporation of the lime agent into the mine waste in order to provide for a sufficiently deep rooting zone. Current "best-available technology" only allows for the effective incorporation of lime to a depth of six inches. It is well known that plant roots need to penetrate to a depth of several feet, but will not venture beyond the zone of lime incorporation in acidic, metal-contaminated mine wastes. One successful method designed to circumvent this problem and to provide a suitable rooting depth is to apply a coversoil layer. This may be a neccessary component of reclamation at localized contaminated sites, however, it is certainly cost prohibitive to include this technique over entire contaminated landscapes. A more practical and cost-effective approach is to directly lime and seed into the acidic mine tailings deposits and wastes. Research is only beginning at Montana State University to develop a deep lime-incorporator which can theoretically mix lime within unconsolidated mine waste to a depth of three feet. Intensive field testing of this mechanical device will be necessary before wholesale use of the apparatus can begin. If this is successful, it will then be feasible to properly lime and seed directly into these acidic materials in a more cost-effective manner.

In addition to the acid mine waste problem and its significance to revegetation and clean-up efforts, of equal importance is the acid mine drainage issue and its impact on surface and ground-water resources. This significant environmental and health problem is currently unaddressed in the State of Montana with respect to remediation technology. Research is just beginning in this state to properly characterize the effects of wetlands treatment in the mitigation of acid mine drainage. Preliminary findings suggest wetlands may be useful in removing the heavy metal burden from acid mine drainage by physical filtration and chemical-exchange principles. Continued research will be required to determine if this technique is indeed practical as a remedial treatment for acid mine drainage. This research will be needed to develop specifications and guidelines for wetland siting, construction and longevity prediction.

In addition to the acid mine waste reclamation issues addressed above, it appears that other factors affecting the success of revegetation of acidic materials should be investigated. For example, MSI Detoxification Incorporated believes that enhanced microbial communities can be effectively utilized to augment the liming effort in order to facilitate neutralization of acidic materials, adsorb high levels of heavy metals, and to prevent reacidification. Research is necessary at the laboratory as well as the field level in order to develop this approach. MSI Detoxification Incorporated has initiated in-house research in this area based on its proprietary technologies and intends to work closely with MSU to provide processes to generate acceptable environments for lecheate reduction and revegetation.

Before cost- and performance-effective remedial action of the vast acidic, metal-contaminated mine wastes in Montana and elsewhere can be accomplished, these and other issues and concerns must be addressed. Only then will it be worth the investment of the millions of dollars needed to properly clean up Montana's mining legacy.

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TESTIMONY OF

MR. R. GLENN VAWTER

VICE-PRESIDENT

WESTERN RESEARCH INSTITUTE

UNIVERSITY OF WYOMING RESEARCH CORPORATION

PRESENTED TO

COMMITTEE ON ENVIRONMENT AND PUBLIC WORKS

SUBCOMMITTEE ON HAZARDOUS WASTE AND TOXIC SUBSTANCES

U.S. SENATE

BOZEMAN, MONTANA

APRIL 14, 1987

An Affiliate of University of Wyoming Research Corporation

I. INTRODUCTION

MR. CHAIRMAN, MEMBERS OF THE SUBCOMMITTEE, I AM GLENN VAWTER, VICE-PRESIDENT OF THE WESTERN RESEARCH INSTITUTE (WRI). ON BEHALF OF WRI, WE APPRECIATE THE OPPORTUNITY TO COME BEFORE THIS SUBCOMMITTEE TODAY TO DISCUSS WRI'S EXPERIENCES WITH DEVELOPING AND DEMONSTRATING NEW HAZARDOUS WASTE TREATMENT AND CLEANUP TECHNOLOGIES.

WRI IS LOCATED ON THE UNIVERSITY OF WYOMING CAMPUS IN LARAMIE, WYOMING, AND EMPLOYS 180 PEOPLE. WRI IS A NOT-FOR-PROFIT ENVIRONMENTAL AND ENERGY RESEARCH ORGANIZATION OF THE UNIVERSITY OF WYOMING RESEARCH CORPORATION. CREATED IN 1983, WRI HAS BEEN AT THE FOREFRONT OF CONDUCTING RESEARCH FOR THE U.S. DEPARTMENT OF ENERGY AND THE PRIVATE SECTOR TO ADVANCE THE KNOWLEDGE ON TECHNOLOGICAL AND ENVIRONMENTAL ISSUES IN THE ENERGY FIELDS.

OVER THE PAST SEVERAL YEARS, WRI HAS ALSO PERFORMED AS A CONTRACT LABORATORY FOR THE U.S. ENVIRONMENTAL PROTECTION AGENCY (EPA). IN THIS CAPACITY, WRI PROVIDES SPECIALIZED ANALYTICAL SERVICES TO EPA'S SUPERFUND PROGRAM. WRI HAS INCREASINGLY TAKEN ON A ROLE OF PROVIDING EPA WITH SPECIAL ANALYTICAL SERVICES. THESE SERVICES INCLUDE ACCEPTING AND PERFORMING ANALYSES ON ACUTELY TOXIC AND UNKNOWN MIXTURES OF HAZARDOUS WASTES THAT OTHER LABORATORIES ARE UNEQUIPPED OR UNWILLING TO ACCEPT. I HAVE INCLUDED AS AN APPENDIX TO MY TESTIMONY A DETAILED DESCRIPTION OF WRI'S RECENT ACCOMPLISHMENTS AS WELL AS OTHER PERTINENT BACKGROUND INFORMATION ON WRI'S CAPABILITIES.

WRI HAS CONDUCTED SEVERAL YEARS OF RESEARCH INTO ENERGY RESOURCE RECOVERY METHODS AND RELATED ENVIRONMENTAL MITIGATION

PROCESSES. FROM THIS EXTENSIVE RESEARCH ACTIVITY, WRI WAS ABLE TO DEVISE INNOVATIVE AND ALTERNATIVE USES FOR SUCH PROCESSES IN THE ENVIRONMENTAL FIELD. ONE SUCH EXAMPLE IS THE CONTAINED RECOVERY OF OILY WASTES (CROW[c]) PROCESS. IN 1984, WRI SCIENTISTS AND ENGINEERS DEVELOPED A CONCEPT TO RECOVER HAZARDOUS WASTES FROM MANY SITES ACROSS THE COUNTRY. THIS CONCEPT IS A MODIFICATION OF TIME-TESTED PETROLEUM RECOVERY TECHNOLOGY.

WRI CONSIDERS THIS CONCEPT TO BE AN ALTERNATIVE USE OF A TECHNOLOGY. WE BELIEVE IT IS AN INNOVATIVE HAZARDOUS WASTE TREATMENT AND CLEANUP TECHNOLOGY. BECAUSE OF THESE TWO REASONS, WRI SUBMITTED A PROPOSAL TO EPA SEEKING DEVELOPMENT AND DEMONSTRATION ASSISTANCE. THIS PROPOSAL WAS SUBMITTED PURSUANT TO SECTION 311 OF THE SUPERFUND AMENDMENTS AND REAUTHORIZATION ACT (SARA) THAT DIRECTS EPA TO ASSIST IN THE DEVELOPMENT OF INNOVATIVE AND ALTERNATIVE HAZARDOUS WASTE TREATMENT AND CLEANUP TECHNOLOGIES. WE ARE HERE TODAY TO DISCUSS OUR EFFORTS TO DEVELOP AND DEMONSTRATE THE USEFULNESS OF THE CROW[c] TECHNOLOGY TO CLEANING UP, ONCE AND FOR ALL, THOUSANDS OF HAZARDOUS WASTE SITES. BEFORE I ADDRESS THIS ISSUE, I WOULD LIKE TO DESCRIBE HOW THE CROW[c] TECHNOLOGY WOULD BE USED.

II. CONTAINED RECOVERY OF OILY WASTES

THOUSANDS OF TOWN GAS AND WOOD PRESERVING SITES EXIST IN THE WEST AND ACROSS THE COUNTRY. THESE SITES GENERALLY CONTAIN ONE SIGNIFICANT ENVIRONMENTAL AND HUMAN HEALTH THREAT--OILY WASTES. THESE WASTES THREATEN GROUNDWATER AND SURFACE WATER SUPPLIES.

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OFTEN THE SITE COVERS TENS OF ACRES MAKING THE "DIG IT UP" CLEANUP SOLUTION ECONOMICALLY UNWISE. IN MANY CASES, THESE DENSE ORGANIC LIQUIDS HAVE LEAKED FROM WASTE TREATMENT FACILITIES OR HAVE BEEN INJECTED INTO DISPOSAL WELLS. ALREADY EPA HAS LISTED 40 WOOD TREATING SITES ON THE NATIONAL PRIORITIES LIST. THIS INCLUDES THE IDAHO POLE COMPANY IN BOZEMAN, MONTANA.

DISCHARGE OF DENSE ORGANIC LIQUIDS TYPICALLY RESULTS IN SATURATED SUBSURFACE ACCUMULATIONS OF OILY WASTES. WHEN DENSER THAN WATER, OILY WASTE DISCHARGES PERMEATE DOWNWARD THROUGH THE SUBSURFACE UNTIL FURTHER PENETRATION IS BLOCKED BY IMPERMEABLE BEDROCK OR CLAY BARRIERS. ABOVE THESE BARRIERS, THE ORGANIC LIQUID PHASE ACCUMULATES BY FILLING A LARGE FRACTION OF THE SUBSURFACE PORE SPACE. WHEN THE PORE SPACE BECOMES SATURATED WITH ORGANIC LIQUIDS, THE OILY WASTE ACCUMULATION SPREADS ALONG THE IMPERMEABLE BARRIERS. IF THIS SPREADING ACCUMULATION ENCOUNTERS FRACTURES, DISCONTINUITIES OR MORE PERMEABLE SECTIONS IN THE BARRIERS, THEN THE OILY WASTES PENETRATE INTO DEEPER STRATA.

HIGH ORGANIC LIQUID SATURATIONS REDUCE THE RELATIVE PERMEABILITY OF WATER, SO GROUNDWATER DOES NOT READILY PERMEATE OILY WASTE ACCUMULATIONS. THIS NATURAL RESISTANCE TO GROUNDWATER PERMEATION IS EXPECTED TO RETARD EXTRACTION OF WATER-SOLUBLE COMPOUNDS. CONTAMINANTS FOUND IN TIE AND POLE PLANTS AND IN TOWN GAS SITES HAVE LOW WATER SOLUBILITIES. THEREFORE, EVEN AN EFFECTIVE GROUNDWATER PERMEATION WOULD TAKE DECADES TO EXTRACT ALL OF THE POLLUTANTS.

MICROBIAL DEGRADATION IS ALSO HINDERED BECAUSE THE POLLUTANTS ARE SO TOXIC THAT THEY KILL THE BACTERIA. ALSO, A LOW RATE OF GROUNDWATER PERMEATION REDUCES THE SUPPLY OF NUTRIENTS FOR MICROBIAL ACTIVITY.

CONVENTIONAL GROUNDWATER TREATMENTS PRIMARILY ADDRESS ONLY LATERAL TRANSPORT OF SOLUBLE CONTAMINANTS FROM OILY WASTE ACCUMULATIONS. PUMP AND TREAT METHODS AND SLURRY WALLS DO NOT STOP DOWNWARD PENETRATION OF DENSE ORGANIC LIQUIDS. AND AS WE HAVE LEARNED, THE INTEGRITY OF SLURRY WALLS IS NOT GUARANTEED AND REQUIRES LONG-TERM MAINTENANCE--A COSTLY SITUATION WHEN TRYING TO CLEANUP A LARGE AREA LIKE A WOOD TREATING PLANT.

FINALLY, EXCAVATION ONLY RECOVERS SHALLOW ACCUMULATIONS OF OILY WASTES. EXCAVATION MAY BE INCOMPLETE, FAILING TO RETRIEVE SUBSURFACE CONTAMINANTS. OF COURSE, EXCAVATION IS ADDITIONALLY COSTLY BECAUSE A DISPOSAL/TREATMENT SITE MUST BE FOUND TO HANDLE THE TONS OF EXCAVATED SOIL.

RECOGNIZING THESE PROBLEMS, WRI DEVISED THE CROW[c] TECHNOLOGY. THE CROW[c] PROCESS PROMISES TO RESOLVE A LARGE SEGMENT OF THIS HUMAN HEALTH AND ENVIRONMENTAL PROBLEM--WASTE SITES CONTAINING OILY WASTES THAT THREATEN GROUND AND SURFACE WATER SUPPLIES.

THE CROW[c] PROCESS USES PROVEN TECHNOLOGY THAT HAS PREVIOUSLY BEEN DEMONSTRATED FOR SECONDARY PETROLEUM RECOVERY AND FOR PRIMARY PRODUCTION OF HEAVY OIL AND TAR SAND BITUMEN. BY RECOVERING A LARGE FRACTION OF OILY WASTE ACCUMULATIONS, THE CROW[c] PROCESS IMMOBILIZES ANY RESIDUAL ORGANIC LIQUID SATURATION AND SIGNIFICANTLY ENHANCES CONDITIONS FOR BOTH NATURAL AND INDUCED MICROBIAL DEGRADATION.

AS DEVELOPED, THE CROW[c] PROCESS USES HOT WATER DISPLACEMENT TO RECOVER A MAJOR PORTION OF THE ORGANIC LIQUID PHASE IN OILY WASTE ACCUMULATIONS THAT ARE FOUND AT WOOD TREATING SITES AND TOWN GAS SITES. THE ORGANIC LIQUID PHASE IS MOBILIZED BY CON-

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TROLLED HEATING AND IS DISPLACED TO PRODUCTION WELLS BY SWEEPING THE OILY WASTE ACCUMULATION WITH HOT WATER. THIS RECOVERY OF OILY WASTE ACCUMULATION IMMOBILIZES ANY RESIDUAL SATURATION OF ORGANIC LIQUIDS AND GREATLY ENHANCES PROSPECTS FOR USING MICROBIAL DEGRADATION. CHEMICAL ADDITIVES ARE INCORPORATED INTO THE RECOVERY OPERATION TO EXTRACT CONTAMINANTS THAT POSE AN IMMEDIATE ENVIRONMENTAL CONCERN OR RESIST MICROBIAL DEGRADATION. DURING RECOVERY OPERATIONS, THE MOBILIZED LIQUIDS ARE CONTAINED VERTICALLY BY CONTROLLING TEMPERATURES WITHIN THE OILY WASTE ACCUMULATION, AND HORIZONTALLY BY HYDRAULICALLY ISOLATING THE AFFECTED AREA FROM THE SURROUNDING GROUNDWATER SYSTEM. EXCESS WATER PRODUCTION IS TREATED IN COMPLIANCE WITH FEDERAL AND STATE DISCHARGE REGULATIONS.

III. DEVELOPING AND DEMONSTRATING THE CROW[c] PROCESS

THIS COMMITTEE IS TO BE CONGRATULATED FOR ITS ACTIONS LAST YEAR THAT RESULTED IN THE REAUTHORIZATION OF THE COMPREHENSIVE EMERGENCY RESPONSE, COMPENSATION, AND LIABILITY ACT (CERCLA). WRI WAS PARTICULARLY ENCOURAGED BY THE INCLUSION OF SECTION 311 OF SARA.

SECTION 311 DIRECTS EPA TO ASSIST IN THE DEVELOPMENT AND DEMONSTRATION OF INNOVATIVE AND ALTERNATIVE TREATMENT TECHNOLOGIES THAT MAY ACHIEVE A MORE PERMANENT PROTECTION OF HUMAN HEALTH AND THE ENVIRONMENT. THIS SUPPORT IS VITAL TO THE EFFORT TO FIND ALTERNATIVES TO CONVENTIONAL CLEANUP TECHNOLOGIES. EPA HAS RESPONDED TO THIS PROVISION BY ESTABLISHING THE SUPERFUND INNO-

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VATIVE TECHNOLOGY AND EVALUATION PROGRAM (SITE). WRI CURRENTLY HAS A PROPOSAL PENDING BEFORE THE EPA SITE OFFICE IN RESPONSE TO A SOLICITATION FOR PROPOSALS SEEKING ASSISTANCE BOTH TO DEVELOP AND DEMONSTRATE INNOVATIVE AND ALTERNATIVE TECHNOLOGIES.

WRI HAS WORKED FOR MORE THAN TWO YEARS TO DEVELOP THE CROW[c] PROCESS. DURING THIS TIME PERIOD WE GAINED SOME VALUABLE INSIGHTS INTO HOW TO MOVE INNOVATIVE AND ALTERNATIVE TECHNOLOGIES INTO THE FIELD. I WOULD LIKE TO DISCUSS SOME OF OUR EXPERIENCE TO DATE. I WOULD ALSO LIKE TO BRING TO YOUR ATTENTION SOME OF OUR MAJOR CONCERNS WE HOPE WILL RECEIVE SERIOUS CONSIDERATION BY POLICYMAKERS AS THE SITE PROGRAM BECOMES A MATURE PROGRAM.

AT THE OUTSET, ALLOW ME TO ACKNOWLEDGE THAT THE SITE PROGRAM IS A NEW ACTIVITY FOR EPA. WE FULLY APPRECIATE THAT MANY OF THE ISSUES SHOULD BE RESOLVED OVER TIME.

WRI ENCOUNTERED NUMEROUS PROBLEMS IN ITS EFFORTS TO DEMONSTRATE THE ECONOMIC AND ENVIRONMENTAL PROTECTION VIABILITY OF THE CROW[c] PROCESS. THESE PROBLEMS INCLUDE:

- CAPITAL FORMATION;
- LIABILITY AND IDENTIFYING POTENTIAL SITES TO DEMONSTRATE THE TECHNOLOGY;
- UNDERSTANDING EPA SITE PROGRAM PRIORITIES; AND
- ACCEPTABLE SITE PROGRAM PROPOSALS.

A. CAPITAL FORMATION

WRI IS A NOT-FOR-PROFIT RESEARCH ORGANIZATION. WE DO NOT HAVE THE CAPITAL RESERVES TO FUND A DEMONSTRATION.

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SECTION 311 PROHIBITS FEDERAL ASSISTANCE FOR A FULL-SCALE DEMONSTRATION UNLESS IT CAN BE DEMONSTRATED THAT PRIVATE FINANCING IS IMPOSSIBLE WITHOUT FEDERAL ASSISTANCE. IN ANY EVENT, EPA MAY ONLY PROVIDE FIFTY PERCENT OF THE TECHNOLOGY DEMONSTRATION UP TO $3 MILLION. A DECEMBER 1986 SITE PROGRAM PLAN REAFFIRMS THIS STATUTORY PROVISION. IT INDICATES THAT BECAUSE OF LIMITED INITIAL FUNDS, NO FUNDING WILL BE PROVIDED TO FULL-SCALE DEMONSTRATIONS UNLESS IT CAN BE DEMONSTRATED THAT NO PRIVATE FUNDS CAN BE SECURED WITHOUT FEDERAL ASSISTANCE.

WHILE WE DO NOT ADVOCATE THE FEDERAL GOVERNMENT ASSUMING THE ROLE OF UNDERWRITING THESE PROJECTS, WE DO BELIEVE A DISTINCTION SHOULD BE MADE BETWEEN NOT-FOR-PROFIT AND FOR-PROFIT ORGANIZATIONS AND THEIR CAPABILITIES TO COMPLY WITH THE EXISTING SITE PROGRAM FUNDING ASSISTANCE CRITERIA.

AS A RESULT OF THIS POLICY DECISION, WRI APPEARS TO BE LIMITED IN ITS ABILITY TO RECEIVE FEDERAL ASSISTANCE. INDEED, THIS IS NOT NECESSARILY UNIQUE TO US. WE BELIEVE THAT MEDIUM-SIZED NOT-FOR-PROFIT RESEARCH ORGANIZATIONS WILL ALSO BE AT A SIMILAR DISADVANTAGE. THIS POLICY POSITION IRONICALLY FORCES NOT-FOR-PROFITS TO RELINQUISH CONTROL OF THEIR RESEARCH AFTER YEARS OF COSTLY RESEARCH AND JOIN FORCES WITH THOSE ENTITIES THAT HAVE READY ACCESS TO CAPITAL. IT IS MEDIUM- AND SMALL-SIZED RESEARCH ENTITIES THAT HAVE THE FLEXIBILITY TO DEVELOP NOVEL IDEAS SUCH AS CROW[c]. FORCING THE MERGER OF THESE KINDS OF ORGANIZATIONS WITH

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OTHERS SIMPLY BECAUSE OF A NEED FOR FUNDS IS THE WRONG KING OF MESSAGE TO BE SENDING THE RESEARCH COMMUNITY.

FINALLY, WE SEE THE NEED FOR CLARIFICATION ON LESS THAN FULL-SCALE DEMONSTRATIONS. SPECIFICALLY, WOULD FEDERAL SUPPORT BECOME AVAILABLE TO DEVELOP TECHNOLOGIES. URI BELIEVES THAT A COST-EFFECTIVE FUNDING ASSISTANCE IN SUPPORT OF THE DEVELOPMENT PROCESS IS VITAL TO FACILITATE SUCCESSFUL FULL-SCALE DEMONSTRATIONS OF INNOVATIVE TECHNOLOGIES.

B. ACCEPTABLE SITE PROPOSALS

OUR EXPERIENCES TO DATE HAVE ILLUSTRATED THAT SMALL- TO MEDIUM-SIZED RESEARCH FIRMS ARE AT A DISADVANTAGE WHEN TRYING TO DETERMINE WHAT EPA IS LOOKING FOR. NO CONCEPT SHOULD BE SUMMARILY DISMISSED. WE BELIEVE EPA SHOULD SEEK TO PROVIDE A STABLE OF DIFFERENT TECHNOLOGIES. THE EPA'S CURRENT PRIORITIES SEEM TO SUGGEST A BIAS TOWARD INCINERATION. WHILE THIS MAY BE A CONSEQUENCE OF EARLIER RESEARCH, WE BELIEVE THAT IN SITU TREATMENT AND DISPOSAL PROCESSES OFFER BETTER CLEANUP OPTIONS AND DESERVE EQUAL OPPORTUNITIES TO BE DEMONSTRATED.

AS MUCH AS EPA SHOULD SEEK TO ENHANCE A DIVERSE PORTFOLIO OF CONCEPTS, WE ALSO URGE THE AGENCY TO CONSIDER ADVISING SITE APPLICANTS ON ACCEPTABLE FUNDING REQUESTS. OUR EXPERIENCES DEMONSTRATE THAT A GULF EXISTS BETWEEN WHAT EPA BUDGETS CAN SUPPLY AND THE RESEARCH NEEDS FOR INNOVATIVE TECHNOLOGY DEVELOPMENT.

C. LIABILITY AND IDENTIFYING A DEMONSTRATION SITE

IRONICALLY, IF A SITE OTHER THAN A NATIONAL PRIORITY LIST (NPL) SITE IS SELECTED TO DEMONSTRATE THE TECHNOLOGY, IT IS ALMOST IMPOSSIBLE TO GAIN PERMISSION AND NECESSARY PERMITS. IN THE CASE OF AN NPL SITE, IF A POTENTIALLY RESPONSIBLE PARTY OBJECTS TO THE USE OF AN INNOVATIVE OR ALTERNATIVE TECHNOLOGY, THE DEMONSTRATION IS THEORETICALLY DELAYED, IF NOT DERAILED.

THESE SITUATIONS DEVELOP BECAUSE OF THE INHERENT LIABILITY ASSOCIATED WITH HAZARDOUS WASTE CLEANUPS. EVEN WITH THE INDEMNIFICATION PROVISIONS OF SARA, NPL SITE POTENTIALLY RESPONSIBLE PARTIES AND PRIVATE SITE PARTIES ARE HESITANT TO ALLOW EXPERIMENTAL TECHNOLOGIES ON THE SITE WITHOUT SUFFICIENT EVIDENCE THAT THE TECHNOLOGY WILL WORK.

ADDITIONALLY, THE SITE PROGRAM PLAN INDICATES THAT APPLICABLE STATE AND FEDERAL PERMITS WOULD BE REQUIRED AT A DEMONSTRATION CONDUCTED AT SITE THAT WAS NOT AN NPL SITE. AS WE ALL KNOW, THE ABILITY TO OBTAIN PERMITS FOR CONVENTIONAL TREATMENT TECHNOLOGIES IS TORTUOUS IN THE BEST OF CIRCUMSTANCES.

OUR EXPERIENCES HAVE DEMONSTRATED THAT WHEN A SITE IS COMPATIBLE WITH THE TECHNOLOGY, THE OWNER IS UNWILLING TO EXPOSE HIS COMPANY TO POTENTIAL LIABILITIES THAT MAY RESULT FROM THE USE OF A NEW TECHNOLOGY. BECAUSE WE BELIEVE OUR EXPERIENCES ARE NOT UNIQUE, WRI RECOMMENDS THAT EPA AND CONGRESS CONSIDER USING TRULY ABANDONED SITES (THOSE WITH NO POTENTIALLY RESPONSIBLE PARTIES) AS TEST BEDS FOR THE SITE

PROGRAM. BY TAKING THIS APPROACH, A DATA BASE COULD BE COLLECTED ON TECHNOLOGIES WITHOUT THE DELAYS ENCOUNTERED BY QUESTIONS OF LIABILITIES AND PERMIT ACQUISITIONS. ASSUMING SUCCESSFUL DEMONSTRATIONS AT THESE SITES, RESEARCHERS WOULD HAVE THE NECESSARY INFORMATION TO ENSURE THAT THE TECHNOLOGY WOULD BE USEFUL IN OTHER CLEANUPS WHERE RESPONSIBLE PARTIES EXIST.

D. UNDERSTANDING SITE PROGRAM PRIORITIES

SECTION 311 ALSO DIRECTS EPA TO ENSURE THAT SMALL BUSINESS PARTICIPATION IN THIS PROGRAM BE GUARANTEED TO THE MAXIMUM EXTENT POSSIBLE. SMALL NOT-FOR-PROFIT RESEARCH ORGANIZATIONS FACE MANY ISSUES THAT THEIR LARGER FOR-PROFIT COUNTERPARTS EASILY OVERCOME. TO DATE, WE ARE UNAWARE OF ANY SPECIFIC SITE POLICY OR PROGRAM TO ENSURE PARTICIPATION BY SMALL NOT-FOR-PROFIT RESEARCH ORGANIZATIONS LIKE WRI. AS I STATED, THIS IS A NEW PROGRAM. I HOPE THAT MANY OF THESE ISSUES ARE CURRENTLY BEING RESOLVED.

IV. CONCLUSION

IN SUMMARY, I WOULD RESTATE WRI'S POSITION THAT THE SITE PROGRAM HAS BEEN IN PLACE ONLY A SHORT PERIOD OF TIME. MANY OF THE ISSUES WILL NATURALLY BE RESOLVED AS THEY ARE BROUGHT TO LIGHT. NONETHELESS, I WOULD ENCOURAGE BOTH THIS COMMITTEE AND EPA TO CONSIDER:

- ENSURING THAT SMALL- AND MEDIUM-SIZED NOT-FOR-PROFIT ORGANIZATIONS PARTICIPATE IN THIS PROGRAM;

- CLARIFYING THAT DEVELOPMENT AND LESS THAN FULL-SCALE DEMONSTRATIONS CAN RECEIVE FEDERAL ASSISTANCE WITHOUT THE NEED FOR PRIVATE FINANCING; AND
- RELYING ON TRULY ABANDONED HAZARDOUS WASTE SITES WHEN IT CAN BE SHOWN THAT SUCH A SITE WOULD EXPEDITE DEVELOPMENT, DEMONSTRATION, AND EVALUATION OF A TECHNOLOGY.

THIS CONCLUDES MY TESTIMONY. I WOULD BE HAPPY TO ANSWER ANY QUESTIONS.

TESTIMONY BEFORE THE SENATE SUBCOMMITTEE ON HAZARDOUS WASTE AND TOXIC SUBSTANCES

Bozeman, MT.
April 14, 1987

by

A. Dale Pflug, Vice President - Business Development
BioTrol, Inc., Chaska, MN

Mr. Chairman, my name is Dale Pflug and I am Vice President of Business Development for BioTrol, Inc., a Minnesota based biotechnology company which is dedicated to providing environmental treatment services based principally upon proprietary microbiological technology. More specifically, the company operationally is focusing on providing on-site permanent remedy treatment services using this innovative technology in engineered systems that remove toxic or hazardous chemicals in the groundwater, surface water and soils. This technology is directly applicable to achieving permanent remedies to the environmental problems that exist on many of this nation's NPL sites, and I am here today to describe both the opportunities and difficulties associated with this innovative technology. First, the opportunities.

Background of BioTrol and the Technology

The foundations for BioTrol's microbiological technology began about 10 years ago at the Gray Freshwater Biological Institute, a department of the University of Minnesota dedicated to fundamental research on the quality and availability of water. One of their many studies focused on the biological degradation of contaminants associated with the wood treating industry. Bacteria were discovered which were particularly effective in the detoxification of pentachlorophenol, a powerful biocide and one of the principle wood preserving agents. This discovery seemed particularly important since the remediation alternatives previously available to the wood preserving industry are either technically or economically deficient.

Convinced that the microbiology discovered at the Institute could be developed into commercially viable systems, BioTrol has spent an additional two years in applied research and development at its laboratories and pilot plant facilities in Chaska, MN. This effort has resulted in the development of three major engineered systems for use in on-site treatment services:

a ground-water decontamination system,

a lagoon water treatment system, and

a soils decontamination system.

We have also initiated a R&D program to develop and demonstrate in-situ remediation technology for toxic and hazardous contaminants.

The focus of our on-site services today are the contaminants found in the wood preserving industry, and sites with similar types of contaminants. Successful decontamination is being accomplished for contamination from pentachlorophenol and creosote compounds. In addition, BioTrol is quite unique because of a long-term commitment to research and development. Exciting new developments in microbial systems are leading to expanded capabilities in the detoxification of other difficult to degrade contaminants such as:

chlorinated solvents (TCE and related compounds),

poly-aromatic hydrocarbons (PAHs),

poly-chlorinated biphenols (PCBs),

benzene, toluene, ethyl-benzene, xylene (BTEXs) and

others.

All of the commercial products and products under development are based upon naturally occurring bacteria although genetic engineering in anticipated as broader capabilities are sought.

Status of the Water Treatment Technology

We have great anticipation for the truly permanent remedies that can be derived from the application of this technology if the regulatory hurdles can be cleared. For example, one of the BioTrol groundwater decontamination units which are commercially available for installation today, is operating at a NPL wood preserving site in Minnesota, where pentachlorophenol is being reduced from more than 100 ppm to the non-detectable level with residual byproducts that include only harmless carbon dioxide, chloride salts and water.

The toxic components of Creosote (another broadly used wood preservative found on this site) are also effectively degraded in this application. The total costs of this System are only a few cents per gallon. The treated water is sufficiently clean for discharge to a publicly owned treatment works (POTW). In fact, the water is low enough in contaminants to compare favorably with the typical restrictions found in an NPDES permit. There are literally hundreds of wood preserving sites where this technology can effectively be applied. Right here in Montana, there are at least four sites which can may need this water technology.

Obstacles to Practical Use

There are obstacles to the practical use of this technology. Even though the technology is commercially available, we face a regulatory obstacle concerning toxic and hazardous wastes that believes "once a toxic, always a toxic" regardless of the level of detoxification that has practically been achieved in a treatment process. Quite frankly, we believe Congress intended something quite different when it pressed for "alternative technology that would detoxify"! Again, I refer to the wood preserving industry because of their need for usable technology.

Without the availability of a POTW at many of these sites which I have visited, water from listed wastes (K-001) that could effectively be decontaminated with this technology are still classified as hazardous and therefore cannot be considered for discharge. The undesirable result is the wood preserving industry cannot benefit from using cost effective treatment technology, and are forced into either using off-site disposal or gambling with containment remedies. The use of the delisting process to remove the treated waste from this restriction is ineffective from both a cost and timing consideration

The use of innovative technology which results in effective decontamination must not be penalized by an inability to obtain permission to discharge the resulting treated waters. The same is true of soils which can be treated and returned to their original resting place.

Soils Treatment

BioTrol has a developed a soil decontamination system which will operate as a mobile treatment unit. The initial unit, which will be available for demonstration later in 1987, will have a capacity of 5 tons per hour, comparable to the capacity of a typical mobile incineration unit. The availability of this System provides a viable alternative to incineration and a workable permanent remedy for site clean-up. There is a significant risk that the technology will not be considered in the RI/FS process.

We believe that the struggle to be able to use on-site incineration as a permanent remedy has a dangerous side effect. The preoccupation with incineration as the "permanent remedy" in feasibility studies has resulted in overlooking the other alternatives as permanent remedies. This must not be allowed to happen.

The biological treatment of soils in our mobile unit can be accomplished at a total cost that is considered to be any where from 25-50% below the comparable costs of incineration. The operating characteristics are quite different, requiring lower capital costs, achieving significant energy savings, providing greater flexibility in operational requirements and even enabling product recovery for reuse in some cases.

The operational characteristics of microbiology, and BioTrol's technology in particular, differ significantly from incineration. Smaller units can be designed that will accomplish remediation over a more flexible time frame without economic penalty. The ability to allocate expenditures for remediation over an financially achievable time frame is important to many of the organizations that hope to assume the costs of remediation rather than relying on Superfund itself.

Realign Priorities on Groundwater Remediation

Remediation logic needs overhaul. Groundwater is frequently left to be cleaned up after the major sources of contamination are removed. Delays in arresting the spread of the contaminants simply make the problem worse. Off-site disposal or on-site incineration are accomplished as quickly as possible and attention to groundwater is all too casually left to deteriorate in the disguise of further study during this period. This would be an understandable posture if groundwater contamination problems were not so wide spread.

The appeal for an interim response implementation of aquifer control strategies using pumping with an associated use of groundwater treatment system assures the control of aquifer movement and prevents further deterioration of the aquifer. The use of interim response aquifer control also provides immediate control of subsurface migration of contaminants, regardless of the status of the contaminant source and provides the time to evaluate and implement permanent remedies based upon cost effective innovative technologies. The completion of the permanent remedy can practically occur over a longer period of time while achieving a comparable level of environmental protection.

Increasing levels of concern also appear to be emerging because of the many incidents of groundwater contamination spreading in directions or at rates significantly above those expected in studies and modeling. This suggests the need to give interim groundwater control actions higher priority in remediation programs.

Selection of Remedies

The RI/FS selection process for permanent versus containment remedies is of concern. The evaluation of permanent remedies that require excavation actions in preparation for the treatment can often be disqualified because of the need for temporary storage pile which is interpreted to constitute land disposal. Permanent remedies are frequently eliminated and yet, the regular practice of carrying containment remedy alternatives throughout the Remedial Investigation/Feasibility Study process continues. This is an indefensible inconsistency.

A clear distinction in the evaluation process needs to be made between the removal segment of a remediation and treatment process alternatives. More importantly, we must move beyond casual consideration of permanent remedies by the EPA in the Feasibility Study effort to the point where permanent remedies must be selected whenever practicable.

Future Opportunities and Need for Data

Where do we see the future in terms of opportunity and difficulty? There are many candidate sites within the wood preserving industry for the application of the BioTrol microbiological treatment systems. A number of sites located here in Montana can use this technology for the detoxification of penta and creosote wastes and we are pursuing these candidates on an individual basis. There are at least 60 candidates for this technology that we have identified in the wood preserving industry alone. We will not stop with the wood preserving sites, however.

Ongoing research and development in our laboratories and pilot plant will address, on a priority basis, the major contaminants that are being encountered on NPL sites;however, to justify the sizable R & D expenditures, we need help in obtaining baseline data of the right type and quality. Since many of the candidate sites are operating under consent decrees and are the subject of pending litigation, it is virtually impossible to gain meaningful data that will enable us to characterize the scope and extent of the contaminants problem and to measure to potential applicability of the technology.

Access to site specific sample and treatability data needs to be made available at a much earlier time, preferably in the Remedial Investigation stage. A lack of necessary information restricts our ability to make meaningful analysis of the magnitude and value of the business opportunity.

From a product development standpoint, these data will enable us to establish research priorities that will insure the earliest delivery of working Systems to the field that will address the broadest range of contamination problems. We have appealed directly to Senator Durenberger's office to provide assistance is gaining access to this data and anxiously await an indication of the assistance that can be provided. Additional information relative to the current status of individual NPL sites and the associated decision makers is also needed.

Use of the SITE Program

BioTrol has not submitted a proposal under the SITE Program as of this time because of a concern for the protection of trade secrets and proprietary information that has been acquired by the company at a significant cost.

Summary

In conclusion, I want to express my appreciation for the opportunity to describe the opportunities and associated difficulties of implementing alternative technologies in this field. We have a high level of confidence in the broad range of application potential of microbiologically based treatment systems to eliminating contamination problems. Our difficulties will remain the challenge of overcoming the many administration obstacles that I've described today which will frustrate the practical application of an otherwise usable technology.

State of Montana
Office of the Governor
Helena, Montana 59620
406-444-3111

TED SCHWINDEN
GOVERNOR

REMARKS OF GOVERNOR TED SCHWINDEN BEFORE THE U.S. SENATE HAZARDOUS WASTE AND TOXIC SUBSTANCES SUBCOMMITTEE REGARDING THE RESOURCE CONSERVATION AND RECOVERY ACT

ON TUESDAY, APRIL 14, 1987,
in BOZEMAN at 10:45 a.m.

I am pleased that Senator Baucus has brought this Subcommittee to the rural West to learn how Montanans are coping with one of the more important pieces of environmental legislation Congress has passed in recent years -- that dealing with the treatment, storage and disposal of hazardous waste.

Low population numbers and a small industrial base might cause some to dismiss our hazardous waste concerns as trivial when compared to those of folks in New Jersey, Pittsburgh or the Los Angeles Basin. But, as experts here today will point out, despite our reputation for unsullied landscapes and near pristine air and water, Montana has its share of hazardous waste problems -- problems that are both serious and widespread. For example, Montana's over 100 abandoned refinery sites have left a legacy of spillage that is now contaminating groundwater. A century of mining and smelting in the Butte-Anaconda area have left a series of Superfund sites that are among the largest in the nation. Post and pole, or tie-treating plants, continue to make the news as a source of local surface or groundwater pollution.

Today, I don't intend to focus on the extent of environmental damage or on the seriousness of the many health hazards that such problems represent. I'll leave that to the experts. Instead, let me focus on how Montana is implementing the growing list of laws and regulations affecting how hazardous substances are controlled.

Like most states, urban or rural, Montana has developed a state program to implement new and changing federal laws such as the Federal Strip Mining Act or the subject of today's hearing, the Resource Recovery and Reclamation Act (RCRA). Because of the 1984 changes to RCRA, establishments that generate in excess of 220 pounds of hazardous waste in a calendar month must comply with new handling, storage, transportation and disposal requirements. The changes also establish new standards for municipal landfills receiving waste from small quantity generators. Commercial pesticide applicators, garages, paint stores, printers, dry cleaners, farmers and others now face added expense for disposal of their wastes. Because of potential liability problems, many county landfills are now refusing to accept any hazardous waste -- including waste from those generating less than the 220-pound cutoff.

I am confident that state and federal agencies possess the technical know-how to administer the rash of new laws and regulations. However, I am not so confident of government's ability to sell these new programs to a population that is increasingly wary of any new governmental regulation. To overcome that skepticism, Montana has recently taken a number of positive steps:

- In cooperation with local Chambers of Commerce, the Department of Health and Environmental Sciences is conducting training sessions throughout the state to explain how the recent RCRA changes apply to small generators.

- Last year, our Department of Health contracted a feasibility study of the various hazardous waste management options open to Montana. The study recommended that a transfer/storage facility be constructed with state funds, but that it be operated by the private sector. However, since private operators were willing to both construct and operate a collection system in Montana, I believe they should be given the opportunity to show that the private sector can provide disposal services to all generators in the state at a fair price. Should the private sector fail, the state could then advertise for bids to construct and operate the facility.
- Over the next biennium, approximately $212,000 in state monies will instead be used to help businesses minimize or eliminate the hazardous waste they generate. For example, by conducting waste stream studies to determine feedstock changes or by helping people find alternative technology for managing wastes, we can go a long way toward eliminating the need for a long-term, collection and storage facility.
- Under Title III legislation approved last year, Congress mandated -- but did not fund -- major state and local responsibilities in chemical emergency planning and community right-to-know. Later this week, I plan to establish a State Emergency Response Commission to designate local emergency planning districts and to appoint and supervise planning committees within each district.

Having recently been involved in the debate over the transfer station issue, I recognize that conventional disposal can be expensive -- anywhere from $60 to $300 a drum. Given that price tag, I see a critical need to develop alternative technologies -- ones that are cheaper and that meet the RCRA goal of making land disposal the method of last resort.

I was encouraged recently to receive a letter from a Billings automobile dealer who wrote that, with the assistance of the state Health Department, he had purchased a solvent recycler that recycles all of his waste solvent, eliminating the need to pay for disposal. Equally encouraging, refineries in the Billings area are working on a demonstration project involving land treatment of petroleum wastes via biological breakdown. Similar projects are underway for the degradation of wood-treating wastes.

From an efficiency and cost-savings standpoint, state administration of hazardous waste regulations is preferable to federal control. However, we recognize the EPA as an indispensible partner in achieving our goals. The scientific research EPA conducts in the areas of alternative technology, product substitution and waste minimization is simply beyond most state budgets. Time and again, EPA findings and their translation into new technology allow the states to implement effective, defensible statutes and regulations. As one example, the EPA has effectively demonstrated a new technology for chemically destroying dioxins from contaminated groundwater at the Montana Pole Superfund site near Butte. The technology demonstrated at the former wood-treating facility in Butte can be applied at similar sites throughout the nation.

We are now in our fourth year of Superfund efforts in the Butte, Anaconda and Milltown areas. While some cleanup -- such as the dismantling of the Anaconda smelter -- has occurred, Superfund efforts at these sites are still in the study phase. After four years, the public and elected leaders are becoming increasingly skeptical of government's ability to actually produce results. By becoming so careful in our attempts to build a legal case regarding the extent of damages and their health effects, we are opening ourselves to the charge that government would rather colonize a problem than solve it.

The maintenance of long-term citizen support may require quicker assessment of what unacceptable health risks are. It is my understanding that CERCLA reauthorization encourages industry and government to negotiate viable cleanup options, a direction I strongly support.

I am also concerned about recent EPA actions to develop a non-coal mining waste program under Subtitle D of RCRA. As Gary Amestoy, administrator of Montana's Mined Land Reclamation Program will testify later today, Montana already has an effective hard rock reclamation program that protects air and water quality, both during and after mining. I applaud former EPA Regional Director John Welles' creation of the mining waste forum to seek answers to such potential conflicts between state and federal authority. Clearly, the EPA needs input from state, mining industry and environmental organizations before it begins to draft regulations to regulate non-coal mining wastes. Montana intends to remain an active participant in the forum.

As John Welles noted last year, "The major way we get the job done (in Region VIII) is through partnerships with (the) states." While recognizing that the cooperative approach is not always easy, John expressed a philosophy I wholeheartedly endorse..."Better than anything else we know, given good communication and good will, (partnership) works."

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STATEMENT OF

ROBERT L. DUPREY

DIRECTOR OF REGION 8 WASTE MANAGEMENT DIVISION

U.S. ENVIRONMENTAL PROTECTION AGENCY

BEFORE THE

HAZARDOUS WASTE AND TOXIC SUBSTANCES SUBCOMMITTEE

COMMITTEE ON ENVIRONMENT AND PUBLIC WORKS

UNITED STATES SENATE

Given at Bozeman, Montana
April 14, 1987

Mr. Chairman, I am Robert L. Duprey, Director of the Waste Management Division in the Environmental Protection Agency (EPA), Region 8, located in Denver, Colorado. Region 8 includes the States of Colorado, Utah, North Dakota, South Dakota, Wyoming and Montana. I am responsible in Region 8 for managing hazardous waste programs under both the Resource Conservation and Recovery Act (RCRA) and the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA), also known as Superfund. In Montana, Region 8 has also established an office in Helena, Montana, to facilitate environmental support to the State of Montana.

I am pleased to be here today to present Region 8's experience with implementing RCRA for treatment, storage and disposal of hazardous waste, and use of alternative or innovative technology at hazardous waste sites in the Rocky Mountain Region. I will focus primarily on RCRA sites and present relevant experiences from CERCLA sites.

SUPERFUND - USE OF INNOVATIVE TECHNOLOGY

The Superfund Amendments and Reauthorization Act (SARA) of 1986, in Section 209, specifically provides for a major expansion of EPA research and demonstration projects at Superfund sites. EPA has, pursuant to this legislation, established the Superfund Innovative Technology Evaluation (SITE) program. The initial SITE program is evaluating 11 different technologies. The second SITE program solicitation, which closed on March 13, 1987, has received 22 applications for demonstration projects. The Superfund amendments, in Section 121(e), also specifically exempts any removal or remedial action conducted entirely on site from Federal, State and local permits. This provision is, in part, intended to speed up remedies and use of innovative technology at Superfund sites. Section 121 of SARA also requires selection of remedial actions that utilize permanent solutions and alternative treatment technologies to the maximum extent practicable.

In the State of Montana, EPA has already effectively demonstrated a new technology for chemically destroying dioxins from contaminated groundwater at the Montana Pole Superfund site. The Montana Pole site is a former wood-treating facility. EPA's research program, working with Region 8's emergency response program, developed with the IT Corporation and Galson Research Corporation a demonstration project for a process known as the modified KPEG treatment. During July 1986, this process was successfully demonstrated by treating waste oil with 2, 3, 7, 8 dioxin equivalents of 93 ppb down to less than detectable limits. The KPEG process is being further modified for treatment of dioxin contaminated soils and is intended to be pilot tested at the Montana Pole site in the summer of 1987. Region 8 is interested in seeing additional demonstration projects of innovative technology at Superfund sites.

RCRA - USE OF ALTERNATE TECHNOLOGY

The Hazardous and Solid Waste Amendments of 1984 (HSWA) amended RCRA to strengthen use of alternate and innovative treatment technologies. Section 214 of HSWA specifically provides for issuance of research, development and demonstration permits for innovative and experimental hazardous waste treatment technologies. For the purpose of expediting review and issuance of RD&D permits, the Administrator of EPA, consistent with protecting public health and the environment, is authorized to waive permit application and issuance requirements except for requirements related to financial responsibility and public participation. The permit is for a period of 365 days of operation and may be renewed three times.

Nationally, as of December 31, 1986, some 39 RD&D permit applications have been received. There have been six applications withdrawn. Four permits have been issued. The average permit processing time from the date of application is eight months. Attachment I shows the status of applications received in Region 8. Attachment II is a flow diagram illustrating the RCRA research, development and demonstration permit process. Land disposal, including land treatment or placement of waste in surface impoundments, landfills, and piles, are not eligible for RCRA RD&D permits. However, land treatment demonstration permits are provided for in the RCRA permit regulations.

STATUS OF REGION 8 RCRA HAZARDOUS WASTE

In order to illustrate the hazardous waste management issues, obstacles, and opportunities for innovation and use of alternative technology, I believe it useful to define the magnitude of the hazardous waste problem in the Rocky Mountain Western States. In Region 8, there are currently 1404 generators of hazardous waste, 1697 small quantity generators, 513 transporters, 64 storage facilities, 67 land disposal facilities (including six incinerators), and two separate incinerator facilities. The primary objective of the RCRA program is to meet the November 1988 congressional deadline for issuance or denial of RCRA permits for land disposal facilities. Twenty-two of the 67 land disposal facilities have applied for a RCRA permit. The remainder have submitted closure plans for their land disposal facilities except for two bankrupt facilities. Of the 22 permit applications, 11 facilities are currently estimated to qualify for issuance of land disposal permits. Of these 11 facilities, seven are seeking land treatment permits, including four here in Montana. In Region 8, to date 22 storage permits have been issued and one storage permit denied by EPA and the States. In addition, one land disposal permit has been issued. The rest of the land disposal permits are on schedule to be issued or denied by November 1988.

The four land disposal facilities seeking RCRA permits in Montana are illustrative of some of the issues we face in managing hazardous waste in the West. Each of these facilities is seeking a land treatment permit from the Montana Department of Health and the EPA.

Burlington Northern (BN) - Tie Treating Plant - Paradise

The BN facility was issued a land treatment demonstration permit in April 1985. The BN facility is submitting a revised Part B RCRA permit application, incorporating the results of the land treatment demonstration, by June 1, 1987. The projected final RCRA permit issuance date is December 1987. BN also has a facility at Somers that is a combined RCRA and Superfund site and the further planned land treatment facility at Paradise has been proposed by BN as the preferred remedy in the feasibility study to clean up the Somers site. Incineration of waste at Somers is the secondary alternative.

Conoco Landfarm - Billings

The Conoco Landfarm has submitted a draft land treatment demonstration permit application. A revised Part B RCRA permit application in response to State and EPA comments is due July 1, 1987. The estimated date for permit issuance is September 1988.

Exxon Refinery - Billings

Exxon will be submitting a final land treatment demonstration report, along with a revised Part B RCRA permit application, in August 1987. The projected permit issuance date is March 1988.

Cenex Refinery - Billings

Cenex Refinery will be submitting a revised Part B permit application, incorporating results of land treatment demonstration, in October 1987. The projected final RCRA permit issuance date is October 1988.

It is evident that land treatment of petroleum and wood-treating waste is a major issue in issuing RCRA permits in Montana and Region 8, and that land treatment offers a potential technical alternative for cleanup of potentially five of the 37 Superfund sites in Region 8 that involve wood-treating waste. The land treatment demonstration permits will determine if this technique works and biodegrades the waste and remaining waste is immobilized, and that groundwater is protected. The major potential obstacle is the impact of the no-migration criteria contained in the HSWA amendments. All land treatment units involving this type of waste will have some level of air emissions. EPA Headquarters is in the process of determining the impact of the no-migration criteria as related to air emissions.

Hazardous waste management in the rural areas of Western States is often unique due to the volume of waste involved, the size of the facilities, long distances involved for transporting waste and remoteness of some of the facilities. The use of alternate or innovative technologies is necessary if we are to effectively address these problems. The EPA Region 8 Office is committed to work with the States in developing innovative permanent remedies to solve these problems.

Thank you for this opportunity to testify.

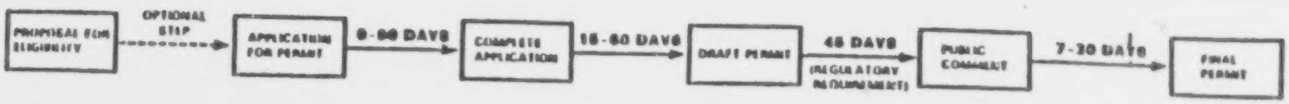
Attachment I

STATUS OF THE RCRA RESEARCH, DEVELOPMENT, AND DEMONSTRATION PERMIT PROGRAM

As of December 31, 1986

Facility/Location	Technology or Process/Wastes	Status
U.S. Army Tooele Army Depot, UT	Liquid incinerator for nerve agents of GB, VX, and Mustard.	U.S. Army submitted a technical background document as a totally enclosed treatment facility on 09-05-85. EPA provided comments on 11-19-85, suggesting RD&D as an alternative. Application received on 09-08-86.
Utah Testing Training Range, Hill Air Force Base, UT	Lithium batteries treatment in deactivation tank.	Application received on 09-25-86. Notice of Completeness 3/87.
Adolph Coors and Waste-Tech Services, Golden, CO	Fluidized bed incineration of soils and waste solvents.	Application received 03-24-86. Draft permit issued 06-29-86. Public hearing on 11-31-86. Application withdrawn on 3-3-87.

RCRA RESEARCH, DEVELOPMENT, AND DEMONSTRATION PERMIT PROCESS


PROPOSAL FOR ELIGIBILITY
OPTIONAL STEP
APPLICATION FOR PERMIT
0-90 DAYS
COMPLETE APPLICATION
15-60 DAYS
DRAFT PERMIT
45 DAYS
(REGULATORY REQUIREMENT)
PUBLIC COMMENT
7-30 DAYS
FINAL PERMIT

- PURPOSE OF RESEARCH
- EXPLANATION WHY THE RESEARCH IS EXPERIMENTAL AND INNOVATIVE
- GENERAL DESCRIPTION OF THE RESEARCH

1. PURPOSE OF RESEARCH
2. EXPLANATION WHY THE RESEARCH IS EXPERIMENTAL AND INNOVATIVE
3. DESCRIPTION OF THE FACILITY*
4. TYPE AND QUANTITY OF HAZARDOUS WASTES
5. ESTIMATED TIMEFRAME TO CONDUCT RESEARCH ACTIVITIES
6. INFORMATION ON ANTICIPATED PERFORMANCE OF THE UNIT(S)*
7. SAMPLING AND MONITORING PLAN INCLUDING QA/QC*
8. NAME AND QUALIFICATIONS OF RESEARCH PERSONNEL
9. SAFETY PLAN*
10. CLOSURE PLAN
11. CLOSURE COST AND LIABILITY INSURANCE

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*LEVEL OF DETAIL AND APPLICABILITY DEPENDS ON THE TYPE OF RESEARCH AND SITE-SPECIFIC FACTORS

- APPLICANT HAS PROVIDED ALL REQUIRED INFORMATION

- TENTATIVE DECISION TO ISSUE OR DENY THE PERMIT
- FACT SHEET SUMMARIZING THE PERMIT OBJECTIVE AND PERMIT CONDITIONS

STANDARD CONDITIONS

- PERMITTEE'S GENERAL RESPONSIBILITIES
- REPORTS AND NOTIFICATIONS
- DOCUMENTS TO BE MAINTAINED AT THE FACILITY

SITE SPECIFIC CONDITIONS

- FACILITY DESIGN
- TYPE AND QUANTITY OF WASTE
- RESEARCH PLAN
- PERSONNEL QUALIFICATIONS
- EMERGENCY RESPONSE PROCEDURES
- RECORDKEEPING
- CLOSURE PROCEDURES
- CLOSURE COST AND LIABILITY INSURANCE
- OTHER CONDITIONS, AS NECESSARY TO PROTECT HUMAN HEALTH AND THE ENVIRONMENT

- WILL INCLUDE PUBLIC HEARING IF REQUESTED BY CITIZENS, EPA, OR PERMIT APPLICANT

- SAME INFORMATION AND CONDITIONS FROM DRAFT PERMIT PLUS CHANGES RESULTING FROM PUBLIC COMMENTS
- TERM OF THE PERMIT (MAXIMUM 365 DAYS OF OPERATION)**

**RENEWABLE FOR 3 ADDITIONAL 1 YEAR INCREMENTS

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UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION VIII
999 18th STREET—SUITE 500
DENVER, COLORADO 80202-2405

APR 2 8 1987

Ref: 8[illegible]EA

Honorable Max Baucus, Chairman
Subcommittee on Hazardous Wastes
and Toxic Substances
Committee on Environment and Public Works
United States Senate
Washington, D.C. 20510

Dear Mr. Chairman:

Regarding your Subcommittee field hearing in Bozeman, Montana, on April 14, 1987, I respectfully request that the following information be included in the hearing record. Rob Walline, EPA's Mining Waste Team Leader and a member of the Region 8 staff, attended the hearing and compiled these comments. If you or your staff have questions regarding this information, please do not hesitate to contact me or Rob at (303) 293-1596.

THE REGULATORY DETERMINATION

On June 30, 1986, EPA Administrator Lee Thomas signed the Regulatory Determination for Wastes from the Extraction and Beneficiation of Ores and Minerals (Federal Register, July 3, 1986, pages 24496-24502). This determination sets the stage for the development of a federal regulatory program specific to mining wastes. Key elements of the determination are important indicators of where EPA is headed. The following statments have been taken directly from the Federal Register notice.

The Problem:

"The Agency is concerned about certain actual and potential mining waste problems and, therefore, plans to develop a program for mining waste under RCRA."

What Type of Program is Needed?

"EPA believes that it needs maximum flexibility to develop an appropriate program for mining waste which addresses the technical feasibility, the environmental necessity and the economic practicality of mining waste controls. The program should consist of a tailored risk-based approach which addresses the diversity and unique characteristics of mining waste problems.

"EPA believes that any requirements necessary to protect human health and the environment should consider the existing federal and state mining waste programs with a view towards avoiding duplication of effort.

"EPA has concluded that, in order to meet that objective, it would want to develop a program that has maximum flexibility to develop an effective control strategy for individual facilities based on site-specific conditions."

Given these needs, what is the most appropriate way to proceed?

Subtitle C:

"The existing Subtitle C regulatory program would probably have to be changed substantially for mining waste to provide that type of flexibility.

"There are substantial uncertainties about whether that program is the right mechanism to address mining waste. It is unclear whether the legal authorities under which EPA would be acting (i.e., Sections 3004(a) and 3004 (x)) give EPA sufficient flexibility to craft a program for 'hazardous' mining waste given the statutory and regulatory approach established for other hazardous wastes.

"This conclusion is based on EPA's belief that several aspects of EPA's current hazardous waste management standards are likely to be environmentally unnecessary, technically infeasible, or economically impractical when applied to mining waste.

"EPA, therefore, believes that entirely different criteria may more appropriately identify the mining wastes most likely to be of concern.

"These uncertainties have led us to the conclusion that Subtitle C does not provide an appropriate template for a mining waste management program."

Subtitle D:

"EPA believes that it can design and implement a program specific to mining waste under Subtitle D that addresses the risks associated with such waste.

"EPA will focus on identifying environmental problems and setting priorities for applying controls at mining sites with such potential problems as high acid-generation potential, radioactivity, asbestos and cyanide wastes.

"EPA will develop a risk-management framework to develop appropriate standards as necessary to protect human health and the environment."

The existing Subtitle D authorities are not a perfect fit for mining waste.

"EPA is concerned that the lack of federal oversight and enforcement authority over mining waste controls under Subtitle D of RCRA and inadequate State resources to develop and implement mining waste programs may jeopardize the effectiveness of the program."

Future Direction:

"The Administration will work with Congress to develop the necessary authority The expanded Subtitle D authority should include federal oversight and enforcement to support an effective state-implemented program for mining waste.

"EPA will use RCRA Section 7003 and CERCLA Sections 104 and 106 to protect against substantial threats and imminent hazards.

"As EPA develops this program for regulating human health and environmental risks associated with mining waste, the Agency may find that the Subtitle D approach is unworkable, perhaps because there is insufficient authority to implement an effective program (i.e., the Agency does not obtain oversight and enforcement authority under Subtitle D), or that states lack adequate resources to develop and implement the program. In such an event, EPA may find it necessary to re-examine use of Subtitle C authority with modified mining waste standards in the future."

THE REGULATORY DEVELOPMENT

An outreach program has been initiated to foster the participation of external parties in the development of the regulatory program. An External Communications Committee (ECC) has been formed to organize this activity. The ECC consists of several EPA Mining Waste Work Group members and other federal representatives who will meet on a regular basis with representatives of states, public interest groups, industry and federal agencies not otherwise involved in the regulatory development. A preliminary meeting of the ECC drew over 100 participants. Because of the difficulty of coordinating and receiving representative participation from such large assemblages, a smaller group consisting of representatives of state regulatory agencies, industry and public interest groups will be used to convey comments and recommendations of their respective constituencies to the ECC. Most ECC meetings will be held in Denver (which is relatively centrally located insofar as mining activity can be said to be centralized), with meetings also held in other locations as appropriate. It is anticipated that meetings of the ECC will be held approximately monthly.

Montana Department of State Lands representative, Gary Amestoy, has participated in the ECC meetings to date. We look forward to continued interaction with the State of Montana throughout the regulatory development.

The current schedule calls for the proposed RCRA mining waste regulations in April of 1989. Detailed planning documents are available if there are further questions on the regulatory development.

MINING WASTE ALTERNATIVE TECHNOLOGY

CERCLA (Superfund):

One area for potential application of alternative technology in mining waste Superfund sites is reprocessing technology. Proposals have been received by EPA which describe processes to recover metals on mining sites. The area that has not received enough attention to date is the ultimate waste characterization and the potential environmental benefits of recovery operations on Superfund sites. Recovery operations that are optimized on the basis of providing the most environmental benefits may be the most cost-effective cleanup options on some sites.

Another area for alternative technology is on sites where conventional solutions will not work. Some of the mining sites involve hundreds of square miles

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and involve billions of tons of material. Some of these sites will require development of alternative technology because there will not be conventional solutions to apply.

RCRA

As stated in the July 3, 1986, Regulatory Determination, EPA is proceeding to develop a site-specific, risk-based mining waste regulatory program under RCRA. Assuming the final program reflects these goals, this should lend itself to the application of alternative technology. Professional judgement decisions on sites will allow new technologies provided they effectively protect human health and the environment.

Thank you for your including these comments in the hearing record. If EPA may provide further information, please let me know.

Sincerely,

Alexandra B. Smith

Alexandra B. Smith
Acting Regional Administrator

Testimony Presented by

Roger C. Thorvilson

Montana Department of Health and Environmental Sciences

Before the

Hazardous Waste and Toxics Substances Subcommittee

Committee on Environment and Public Works

United States Senate

Hearing Held in Bozeman, Montana

April 14, 1987

Mr. Chairman, my name is Roger Thorvilson and I am on the staff of the Solid and Hazardous Waste Bureau of the Montana Department of Health and Environmental Sciences. I am pleased to be given the opportunity to reflect the department's views on hazardous waste management issues as they relate to our programs.

The major waste types produced in Montana reflect the state's rural character. Whether one looks at active generators of defined hazardous wastes in Montana or at the sites now being dealt with as CERCLA candidate sites, the trends are similar--resource extraction industries and agriculture dominate the lists of waste sites. Wastes associated with mining, milling and smelting operations, petroleum refinery wastes, wastes from the process of preserving wood products, and pesticides wastes constitute the overriding majority of this state's hazardous waste problems.

In a typical year, petroleum refining and wood treating wastes account for greater than 90 percent of all wastes reported by regulated generators. Were mining wastes not currently exempted from RCRA, these would assume first or second place in the quantity figures.

With the change in the exemption limits for small quantity generators recently implemented nationally, however, both the scope and the complexion of the RCRA program have been significantly affected. The number of businesses and government entities impacted by the regulations has increased severalfold. More importantly EPA and state regulators no longer deal primarily with large industrial companies and their professional environmental staffs, but now must apply the regulations to much smaller businesses. The primary category of regulated hazardous wastes from these smaller businesses is organic solvents used in dry cleaning, parts washing, and ink and paint removal. A wide variety of hazardous wastes are impacted, however, including cleaning agents, acids, bases, pesticides, vehicle batteries, and laboratory chemicals.

These small businesses not only must deal with the problems of understanding the highly complex hazardous waste regulations, but also face the challenge of accessing and dealing with hazardous waste companies 500 to 800 miles distant in more highly populated areas.

In anticipation of the small quantity generator regulatory amendments, the Montana Department of Health and Environmental Sciences sought and received funding from the 1985 Montana Legislature for a detailed study of the need for additional hazardous waste services in Montana. A part of the study was an evaluation of the state's possible role in assuring the provision of such services. A preliminary study report was provided to the 1987 Legislature for their review. This report recommended that the state develop a hazardous waste collection/transfer system, construct the collection facility, and contract operation of the system to private enterprise. Concurrent with the state study, private enterprise interest in hazardous waste services increased in Montana. Several firms have tested the waters, and one--Special Resource Management, a Montana Power Company subsidiary--has followed through with the provision of consulting, training, waste transportation and brokering services. Because of this private business entry into the hazardous waste area, the Montana Legislature has elected to defer any consideration of direct provision of service by the state until the 1989 session. At that time, the effectiveness of hazardous waste services in Montana will be re-evaluated.

The 1987 Legislature has proposed funding DHES for special activities over the next biennium to foster waste minimization efforts by hazardous waste generators. This funding decision reflects the pragmatic wisdom that the best, most effective, and least costly method of hazardous waste management is to find ways not to create it at all. Although waste minimization efforts can only go so far in the overall waste management scheme, every dollar spent in such efforts will amply reward the waste generator in cost savings over the years. Creative, innovative waste minimization efforts by industry must be strenuously encouraged.

One of the new directives reflected in the 1984 amendments to RCRA--the emphasis on restricting land disposal of hazardous wastes--is of critical importance to hazardous waste management in Montana. A major portion of the hazardous wastes generated by oil refineries and wood treating operations is now being, or is proposed to be, managed by land treatment. This methodology relies on natural physical and microbiological properties of soils to effectively treat organic hazardous constituents of these wastes. The mechanism is at once both treatment of the waste and final disposal on the land. It is an important challenge to the EPA, the states, and industry to evaluate land treatment of hazardous wastes critically and to determine if such methodology can meet the test of being fully "protective of human health and the environment for as long as the waste remains hazardous."

The EPA has begun steps to address the development of innovative technological approaches to waste management in its regulations for research, development and demonstration permits and in its proposed standards for miscellaneous waste management units in Subpart X of 40 CFR Part 264. Congress and the EPA may well need to go further in this direction by accommodating mobile treatment technologies in the approach to permitting. The regulatory structure currently envisions that hazardous wastes will be brought to a fixed-location facility for treatment and/or disposal, but should be amended to address situations where the treatment unit, such as a mobile incinerator or mobile chemical detoxification unit, is brought to the site of waste generation. Permitting of mobile treatment processes has already been addressed for PCB destruction under the Toxic Substances Control Act, and this approach should be adaptable to RCRA.

Switching now to our agency's experience with the federal Superfund Program . . .

Over the past several years, an inventory of sites potentially exhibiting public health or environmental impacts from uncontrolled hazardous substances has been developed by EPA and the states. At present there are 124 Montana sites listed on this inventory. Approximately 30 percent of these potential problem sites have had on-site investigation and sampling conducted to date. These activities have resulted in processing 10 sites for inclusion on the National Priority List in order to be eligible for Superfund financed investigation and remedy. Investigations at some of the sites have indicated potential problems from uncontrolled substances but have not yielded scores high enough on the ranking system model for inclusion on the National Priority List. At others no remaining problems have been found. Attachment I summarizes both Montana inventory sites and the Montana sites included on the NPL.

I will utilize the examples of mine waste sites and wood treating sites to illustrate the role that innovative technology might have in CERCLA remedial actions.

Relatively few historical mining sites rank high enough for inclusion on the National Priority List. While uncontrolled hazardous wastes are often found at these locations and environmental impacts may be severe, these sites are often remote, which reduces any threats to the public health. Those mining-related sites that have been included on the National Priority List in Montana are very large complex sites exhibiting widespread environmental degradation and a variety of issues. Intense effort and considerable expense will be required to remediate or mitigate these problems.

Mining waste sites are an area where innovative solutions could provide considerable assistance. The inorganic contaminants typically found at these sites are not always amenable to the approaches developed at organic waste sites. Quantities of waste may be vast and spread over large areas. Removal to controlled sites may be physically infeasible or cost prohibitive. Chemical approaches rely upon altering the state of the contaminant or altering the environment in which the contaminant exists to reduce its availability to plants, animals and people. Not only are costs of existing approaches to large-scale mining wastes a problem, but the permanence of proposed solutions is almost always questioned.

Achievement of clean-up goals does not await a technological breakthrough, but rather innovative adaptation of existing technologies to the problems on the sites.

Sites with potential environmental and public health effects from wood treating operations in Montana are quite common. These sites may contain hazardous contaminants of either organic or inorganic character. Typically these sites are fairly small and often they are located close to residential areas.

Typical approaches to problems on these sites rely on removal and isolation and/or physical separation. Destruction of the organic contaminants has also been employed in some cases.

Wood treating sites offer significant potential for innovative technologies. We envision that effectiveness can be improved and costs reduced by employing a site-specific mix of existing approaches and innovative chemical and biological technologies.

The original Comprehensive Environmental Response Compensation and Liability Act contained provisions which tended to discourage use of innovative technologies. As a result, the mechanics of implementation developed by the EPA virtually ruled out the use of any approach or technology without a long-proven track record. Reauthorization of CERCLA contains some inducements to develop innovative technologies and has new requirements for permanent solutions, which may force more diligent examination of new alternatives. While the legislative changes are encouraging, considerable effort will be required to adjust processes being employed to select corrective actions. Overall, innovative approaches have great possibilities when considering the hazardous contaminants at Superfund sites in Montana. The process must be made more receptive to evaluating these approaches. Decision makers must accept some risk of failure when determining corrective actions at a site and should remember that these problems which developed over a considerable period of time may take a number of years to remediate.

ATTACHMENT I

Type of Activity	Number of Sites on CERCLIS Inventory
Mining/Mining Related	26
Petroleum Processing	36
Wood Treating	21
Pesticide Related	11
Railroad Spills	9
Landfills	5
Miscellaneous Industrial	16
Total	124

Type of Activity	Number of NPL Eligible Sites
Mining/Mining Related	4
Wood Treating	4
Petroleum Processing	1
Industrial Processing	1
Total	10

ATTACHMENT II

List of Abbreviations

CERCLA	-	The Comprehensive Environmental Response, Compensation and Liability Act of 1980; also called "Superfund".
CERCLIS	-	The CERCLA Inventory System.
CFR	-	The Code of Federal Regulations.
EPA	-	The U.S. Environmental Protection Agency.
PCB	-	Polychlorinated Biphenyl compounds.
RCRA	-	The Resource Conservation and Recovery Act of 1976.

SENATE HAZARDOUS WASTE AND TOXINS SUBCOMMITTEE HEARING

TESTIMONY OF THE
MONTANA DEPARTMENT OF STATE LANDS

April 14, 1987

Bozeman, Montana

Presented by:

Gary Amestoy, Administrator
Montana Department of State Lands
Capitol Station
Helena, Montana 59620
(406) 444-2074

TESTIMONY

On behalf of the Montana Department of State Lands, I would like to take this opportunity to make several comments regarding the Environmental Protection Agency's decision to promulgate rules for the regulation of mining wastes under Subtitle D of the Resource Conservation and Recovery Act.

For brevity's sake, I will limit my comments to the following subjects: (1) the need for the development of an extensive federal regulatory program addressing non-coal mining wastes; (2) state and private sector involvement in the rule promulgation process; and (3) Montana's recommendations for program development.

I. Development of a Non-coal Mining Waste Regulatory Program.

The main issue that concerns Montana is EPA's ultimate goal in the development of a non-coal waste regulatory development program. If the EPA develops a mining waste regulatory program similar to other federal mining programs that are already in effect, the end result will be another SMCRA-type (Surface Mining Control and Reclamation Act) program which is totally unnecessary considering the extent of the non-coal mining waste issue in Montana. Based on our experience with SMCRA, we are concerned that this is where the EPA program is heading.

Montana believes that this program may be another SMCRA-type program for the following reasons:

1. EPA is suggesting amending Subtitle D to provide for federal inspection and oversite authority.

2. EPA is considering the development of performance standards that all operations must meet.

3. EPA is considering developing a program to determine the applicability of state programs and federal funding for states.

Based on Montana's experience with SMCRA, these are the very same parameters that are the foundation of a SMCRA-type program. Although the EPA's initial intentions may be very innocent, we are concerned that the development of this regulatory program will snowball and become another SMCRA.

Montana believes that the development of another extensive federal regulatory program is neither necessary nor wise to develop at this time. This type of program would result in too much duplication of effort on the state and federal level and the program would become too costly and time consuming for effective administration. It is rather ironic that in 1987, the 10th anniversary of the passage of SMCRA, no one that has been involved in the program, neither federal nor state agencies, the coal industry, the environmental community, or the general public can agree on the success or failure of SMCRA. I would think that in 10 years a program would have had more conclusive results.

II. State and Private Sector Involvement

Montana is very concerned about the opportunity for significant input into the entire rule-making process. It appears that the EPA has a predetermined agenda that they plan to implement regardless of state or public input. Montana first became concerned in late January 1986 when we learned that the EPA had sent a report to Congress discussing the promulgation of rules on non-coal mining wastes. We learned of the existence of the report in January of 1986, but it was not until late March that we were able to obtain even a photocopy of the report. Comments were due by no later than March 31, 1986. One would think that a document with so many potential long-term significant impacts to the state mining regulatory programs, state water quality, air quality, the mining industry and the environmental community would have been made more readily available to the state regulatory authorities and the private sector.

Our next meaningful contact from EPA for further involvement was not until November 25, 1986, when we learned that the EPA had established an External Communications Committee (ECC) to "foster participation of external parties in the regulatory development process..." At that time, we were notified that the EPA and the ECC were to meet in Denver, Colorado, on December 8, 1986, some 12 days after our receipt of their letter. The purpose of the meeting was to discuss the Draft Development Plan (DDP) and develop the organization for continual interaction between the external parties and the ECC. This letter outlined a comment period of until December 22, 1986, for comments on the ECC, DDP, regulatory development time schedules and also scheduled the next meeting based on these comments for early January 1987.

The next correspondence from EPA, dated December 23, 1986, was to schedule a meeting for January 6, 1987. I have difficulty believing that all of the comments that were generated from the December 8, 1986 meeting and the comments due on December 22, 1986, could have been thoroughly reviewed prior to the January 6, 1987 meeting when considering both the Christmas and New Year holidays.

Another example was the scheduling of a meeting on "risk assessment" that was to be held in Washington D.C. on February 26, 1987. Montana was notified of the meeting by telephone on February 24, 1987. This notification did not allow enough time to actually get to Washington, let alone prepare for a meeting. Ultimately the meeting was held on March 13, 1987.

In any case, Montana has not received the minutes of the last two meetings, January 6, and March 13, even though Montana is named as a member of the ECC. I understand that the next EPA-ECC meeting is scheduled for late April or early May, but to date I have not heard anything definite.

My point is, based on the EPA's extremely optimistic time-frames for rule promulgation and their record of actual opportunity for meaningful involvement, it appears that the EPA has a predetermined agenda that they are pursuing and only providing limited input by outside participants.

III. Montana's Recommendations for Program Development.

The final issue that I will address is Montana's recommendations on how the program should proceed.

1. The EPA needs to specifically define the non-coal mining waste problem that needs to be solved. Once this is complete, the EPA should continue through the standard techniques for Problem Solving. At this time, the issue of "mining wastes" is far too broad to be realistically addressed. The issues should be clearly defined before proceeding with any data collection.

2. The EPA needs to thoroughly document the actual need for the program and determine their short and long term goals and objectives.

3. The EPA needs to specifically identify what types of mining operations are being targeted (i.e., old sites, abandoned as compared to inactive; existing operation mines and new mines).

4. The EPA needs to thoroughly inventory, review and evaluate all existing federal and state programs and regulations to determine the extent of the problem and each state's ability to respond. The problem will probably vary widely from state to state.

5. The EPA needs to closely coordinate their efforts and encourage participation by the State Regulatory Agencies who should already be familiar with the problems in their states. One coordination problem within states results from the fact that in most cases, the state waste management programs and the state mine reclamation programs are in different agencies.

6. The time frames for completion of rule promulgation that have been outlined to this point are extremely optimistic. The EPA needs to develop a more realistic schedule if the EPA truly desires meaningful participation by other federal agencies, states, industry and environmental interests. The time frames will need to be modified to more realistically reflect the scope of the project. Time frames that are consistantly not met are meaningless. The existing time frames give the appearance that there will be only minimal opportunity for meaningful public involvement.

7. The EPA must consider what type of NEPA compliance document will be required for this rule-making exercise and the corresponding time frames.

8. In the promulgation of rules, the rules must be made flexible enough to consider site-specific criteria rather than trying to implement a broad-brush approach. There is no substitute for case-by-case evaluations.

9. Federal program funding for states is an issue that must be resolved. In times of fiscal shortages, this is a very important consideration.

In summary, Montana believes that if, in fact, a national program is necessary for the regulation of non-coal mining wastes under RCRA, regulations under Subtitle D (State or Regional Solid Waste Plans) are much more palatable than regulations under Subtitle C (Hazardous Waste Management). However, a good deal of up-front preparation is necessary. This preparation must include the definition of the specific problem, needs analysis, an evaluation of existing programs, state and private sector involvement and realistic time frames. These considerations are necessary to develop a program that does not duplicate effort, be overly expensive to administer and place an unnecessary burden on either government, industry or the public sector.

Thank you for the opportunity to comment.

Testimony of

James N. Hartley
Program Manager

for

NORTHWEST HAZARDOUS WASTE
RD&D CENTER

Pacific Northwest Laboratory[a]
Richland, WA.

to

Subcommittee on Hazardous Waste
and Toxic Substances
Committee on Environment and
Public Works

April 16, 1987

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[a] Operated for the U.S. Department of Energy by Battelle Memorial Institute

NORTHWEST HAZARDOUS WASTE RESEARCH, DEVELOPMENT, AND DEMONSTRATION CENTER

Pacific Northwest Laboratory presents the following testimony for the Northwest Hazardous Waste Research, Development, and Demonstration Center and in support of innovative technologies for hazardous and radioactive-mixed waste.

OVERVIEW

The Northwest Hazardous Waste Research, Development, and Demonstration Center was established as part of the Superfund Amendments and Reauthorization Act (SARA) signed by the President on October 17, 1986. Congressman Swift from Washington State introduced the legislative language that established the Center. The legislative statute authorized $10 million for Pacific Northwest Laboratory to establish and operate the Center over a 5-year period at its facilities in Richland and Sequim, Washington. The Pacific Northwest Laboratory (PNL) is operated by Battelle Memorial Institute for the Department of Energy.

SARA authorizes the Environmental Protection Agency (EPA) and the Department of Energy (DOE) to each appropriate up to $5 million to operate the Center. The DOE funding will be directed toward research, development, and demonstration projects related to hazardous and radioactive mixed wastes at the Hanford Site. Funds from EPA will focus on hazardous waste issues in the states of Washington, Oregon, Montana, and Idaho. In addition to the $10 million authorization, the legislative language allows the Center to accept contributions and grants from private industry and other government agencies to conduct research, development, and demonstration efforts on their specific problems.

The Pacific Northwest is an ideal location for the Center. The region has a wide range of environmental settings, varying from extremely arid to very wet climates. All forms of water bodies occur, including rivers, lakes, estuaries, and ocean. These varied settings provide a unique opportunity for the comprehensive study of Superfund hazardous waste site management technologies.

The Center will rely on staff from both PNL and regional universities to devise new and innovative technologies for assessing the impacts of and more permanently and effectively remediating waste sites. Demonstration projects using new and/or adapted technologies will involve the services and expertise of regional contractors and industries.

STATUS

Since the authorization of the Center, PNL has been working with staff from the DOE and EPA at both the headquarter and regional levels to focus the activities of the Center to best meet DOE and EPA needs. For a number of initiatives, including this Center, fiscal year 1987 SARA appropriations did not match authorizations. However, for this fiscal year, DOE Richland Operations Office did provide $1,015,000 to establish and operate the Center.

This funding will be used to accomplish the following objectives:

- Identify and prioritize Northwest regional and Hanford Site hazardous waste technology needs. Two workshops are planned to help further identify and prioritize technology needs.

- Develop a data base for available hazardous waste technologies and those under development. The Center's activities will be closely coordinated with EPA, DOD, and other DOE programs to prevent duplication of effort.

- Prepare a multiyear program plan for the Center and coordinate it with cognizant federal and state government representatives, private industry, and universities.

- Initiate eight research, development, and demonstration projects that address Hanford waste management issues; synopsis of these project are attached to this written testimony. The first criteria for selecting projects was to address Hanford needs; a second criteria was their applicability to Northwest regional and national technology needs.

- Establish contracts with and begin funding research at Northwest universities.

In February, Congressman Swift visited Battelle's facilities and was briefed on the Center's plans for fiscal year 1987. In addition, we provided a detailed description of the In Situ Vitrification (ISV) process, which is one of Battelle's innovative technologies developed for the Department of Energy. The following are excerpts from Congressman Swift's remarks in the Congressional Record of February 25, 1987:

> "The in situ vitrification process solidifies hazardous waste into glass by inserting electrodes into contaminated ground. When electrical current is passed between electrodes, the soil and rock melt, forming a block of glass resembling natural volcanic obsidian. The hazardous material is destroyed or contained in the glass.
>
> In recognition of Battelle's innovative accomplishment, the National Society of Professional Engineers . . . named the process one of the outstanding engineering achievements of 1986. In making this award, the society considers technological originality and innovation, importance to industrial development, fulfillment of human and social needs, and application of known and new engineering principles.
>
> In situ vitrification could have widespread application for the permanent cleanup of hazardous waste sites, not just in the Pacific Northwest, but throughout the United States. It is an exciting development, and it shows Battelle's potential for even more important technology development at the new . . . Northwest Hazardous Waste Research, Development, and Demonstration Center."

The Center is in the process of making arrangements to conduct a large-scale demonstration of ISV on heavy metals and PCBs at the Hanford Site. We expect much of this demonstration program to be funded by private industry and the much of this demonstration program to be funded by private industry and the demonstration to be evaluated by EPA under the Superfund Innovative Technology Evaluation program.

We have made much progress in establishing the Northwest Hazardous Waste Research, Development, and Demonstration Center this year, and the concept is supported by both EPA and DOE. Other government agencies, private industry, and Northwest universities have also expressed interest in working with and conducting programs through the Center. However, appropriations that match the intent of the SARA authorization are needed over the next 4 years to ensure a baseline of support for the Center.

PNL wishes to thank the Hazardous Waste and Toxic Substances Subcommittee for the opportunity to present this written testimony. If the Subcommittee would like additional information on the Northwest Hazardous Waste Research, Development, and Demonstration Center, we would be happy to provide it upon your request.

NORTHWEST HAZARDOUS WASTE RESEARCH, DEVELOPMENT, AND DEMONSTRATION CENTER

RESEARCH PROJECTS IN FISCAL YEAR 1987

The Northwest Hazardous Waste Research, Development, and Demonstration (RD&D) Center has initiated a research program for Fiscal Year 1987. Projects were selected in two technology areas: site characterization and waste treatment technologies. In the future, research projects in the area of environmental and human health assessment technology will also be selected. A summary of each of the ongoing projects is presented below.

SITE CHARACTERIZATION TECHNOLOGY

Site characterization technology research will focus on technologies that the Center will need to characterize waste sites for demonstrating concepts developed by the research program.

Criteria for Waste Site Cleanup: How Clean is Clean

A literature search and interviews will be conducted to identify the biological, chemical, physical, and statistical endpoints that have been successfully used at CERCLA waste sites across the country. These criteria will be evaluated in terms of the scenarios in which they were selected and the selection process used. The literature search will include a review of the "Allowable Residual Contamination Limit" (ARCL) endpoint specifications. At the conclusion of the literature search and interviews at selected sites, guidelines will be prepared for establishing endpoints for remediation of sites at Hanford. In FY88, those endpoints identified in the literature search will be evaluated to determine those that provide the most statistically significant description of the endpoints for various scenarios. These criteria and current methods to measure them will then be identified according to a rigorous and consistent framework, which can be interpreted by researchers, regulators, and site owners.

Advanced Site Characterization Sampling Methodology

A statistical computing and decision analysis system will be developed that can be used at waste sites to devise sampling and data analysis strategies. The system will incorporate state-of-the-art software and hardware and will use an interactive real-time mode for site characterization. Researchers will identify, acquire, and further develop appropriate available software such as BLUEPACK 3-D for contour mapping of contaminant concentrations and DIGMAN (PNL-5028) for sampling and computing strategies. Next, a decision analysis system will be developed that takes into account input such as surface topography, prior knowledge of contaminant sources, and the results or previous sample analysis. The two systems will be combined to provide optimization guidance for the initial and all subsequent sample placements. Once developed, the system will help researchers develop more efficient and cost-effective sampling strategies than currently available systems allow. The system (computer work station) will also produce a topographic description and the spatial dimensions of the waste on the site, which will be needed for conducting and evaluating waste cleanup activities.

WASTE TREATMENT TECHNOLOGY

Research in Waste Treatment Technology will cover a broad spectrum of advanced and innovative concepts. Projects will range from laboratory research to process demonstration and will examine both organic and inorganic hazardous and radioactive mixed wastes. While many of the wastes being used in the investigations are on the Hanford Site, the research is expected to apply to other Northwest sites as well.

Waste Elimination Concepts

Pacific Northwest Laboratory will be conducting research on four concepts for destroying toxic organic liquid wastes not considered suitable for incineration.

Catalytic Destruction of Hazardous Organics in Aqueous Solutions

Laboratory research will be performed to determine the technical feasibility of high-pressure catalytic conversion of toxic organics in aqueous solution to innocuous gases. The research will be based on previous results obtained using nickel-sodium catalyst systems to convert up to 99% of the organic carbon found in high-moisture biomass to methane, hydrogen, and carbon dioxide. This product gas can be safely burned for process heat. During FY87 researchers will characterize several candidate organic wastes, with particular emphasis on those found on the Hanford Site, such as hexone and polychlorinated biphenals (PCBs). A series of screening tests will be performed in an autoclave reactor to identify catalysts that will both convert the specific organic chemicals and will be resistant to possible catalyst poisons, such as sulfur, identified in the candidate wastes. The concept, if successful, will result in the ability to process aqueous streams containing as little as 0.1% organic chemicals. The process can be easily combined with a high-pressure, wet-air oxidation process for secondary treatment of the wastewater to produce a clean stream suitable for discharge to the environment.

Electrochemical Oxidation of Hexone and Other Organic Wastes

Laboratory research on an electrochemical oxidation concept to safely destroy toxic organic chemicals contaminated with heavy metals or radioactive elements will be conducted. These contaminants make other processes less desirable. The process converts the organics to gases while extracting the inorganics as precipitates or onto metal anodes. Researchers will operate a laboratory scale flow cell unit to evaluate several candidate oxidizing ions such as Ce(IV), Ag(II), and Co(III) in both nitric and sulfuric acid solutions. During FY87, emphasis will be placed on tests using hexone contaminated with iodine and metal ions. In addition, selected tests will also be performed using hexone contaminated with normal paraffins which are insoluble in the aqueous phase. The process has the potential for destroying organics in both aqueous and nonaqueous solutions under ambient conditions. Organic chemicals would be destroyed and both heavy metals and inorganic elements would be extracted from the waste. The small quantity of remaining aqueous liquid waste would be further treated by conventional methods if necessary before discharge to the environment.

Biodenitrification of Singe-Shell Tank Wastes

In this project, the technical feasibility of denitrifying salt cakes and sludges in situ in underground storage tanks using anaerobic microorganisms will be evaluated and determined. This technology has been successfully used to destroy nitrates in storage ponds at Oak Ridge, Tennessee. Research is needed to adapt the concept to the environment found within the underground storage tanks at Hanford. During FY87, researchers will evaluate available information to characterize the contents of selected storage tanks for radiation fields, anaerobic conditions, temperature, and chemical compositions. These conditions will then be correlated to those necessary to sustain the microorganisms. This information will be used in research during FY88 to isolate, identify, and test microorganisms in simulated tank wastes. This concept shows promise for providing a simple, in situ method for removing nitrates from single-shell storage tanks, thereby reducing a major hazardous component from the tanks before further treatment.

In Situ Biological Decontamination of Hazardous Chemicals Waste Sites

Research to identify innovative concepts for in situ biological destruction of organic chemicals in soils, groundwater, or surface impoundments, including those with mixed hazardous and radioactive wastes will be initiated. During FY87, researchers will evaluate selected waste sites at Hanford that contain soils and water contaminated with organic chemicals to identify and quantify the presence of stressors to microbial life, including heavy metals, radionuclides, and extremes in pH and salinity. A literature review will also be made to identify microorganisms that may be suitable for the organic wastes under consideration. Results from other biotechnology programs such as those sponsored by EPA and DOE will be included in the review. This information will be used during FY88 to develop and conduct an experimental program. This concept, if successful, would provide a low-cost alternative for decontaminating hazardous waste sites containing organic wastes that have entered the soils or groundwater.

Waste Neutralization and Reclamation Concepts

Optimal Pumping and Siting of Wells in Contaminated Aquifers

Researchers at PNL will develop preliminary computer models for selecting the optimum location of pumping and injection wells used in treating contaminated groundwater. The success of groundwater remediation processes, both in terms of cost and percent recovery, is very dependent upon the proper location of the pumping and injection wells. The optimization model would be developed to incorporate state-of-the-art groundwater models with both expert systems and optimization techniques. Once developed, the model will be useful in both placing and evaluating pumping and injection wells and in optimizing the placement of additional site characterization wells.

Waste Isolation Concepts

Pilot-Scale Testing of In Situ Vitrification (ISV) of PCB-Contaminated Soils

Researchers will conduct a pilot-scale ISV test using soil contaminated with PCBs to confirm the fate of the chemicals in the soil. This test is a logical progression from successful laboratory tests for a non-DOE client using PCBs. During FY87, researchers will conduct the test on a soil mixture containing one barrel of PCBs in a 500 to 1000 ppm concentration. Offgases will be sampled during the test. Following the test, soil samples and vitrified block samples will be collected and analyzed in FY88 to determine the thermal destruction efficiency and to assess any migration of PCBs to the surface or the soil outside the vitrification zone. The results of this test will provide important information regarding the potential for ISV to restore PCB-contaminated soils.

RESOURCE CONSERVATION AND RECOVERY ACT—OVERSIGHT

Land Disposal of Hazardous Wastes

FRIDAY, JUNE 5, 1987

U.S. Senate,
Committee on Environment and Public Works,
Subcommittee on Hazardous Wastes and
Toxic Substances,
Washington, DC.

The subcommittee met, pursuant to notice, at 9:10 a.m., in room SD-406, Dirksen Senate Office Building, Hon. Max Baucus (chairman of the subcommittee) presiding.

Present: Senators Baucus, Lautenberg, Reid, Graham, Stafford, and Durenberger.

OPENING STATEMENT OF HON. MAX BAUCUS, A U.S. SENATOR FROM THE STATE OF MONTANA

Senator Baucus. I want to welcome all of our guests today. In particular, I would like to acknowledge my colleague from Minnesota, Senator Durenberger, the ranking Republican member of this subcommittee. Senator Durenberger is one of this nation's leading proponents in the Senate for strong protection of our country's ground water supplies. Preventing the introduction of hazardous waste into the land is critical to his efforts. This committee is fortunate to have such a dedicated and knowledgeable Senator participating in these hearings today.

The purpose of today's hearings—another in a series of hearings I plan to conduct on hazardous waste—is to investigate how well EPA is carrying out the intent of the law in regards to the disposal of hazardous wastes.

At first glance, EPA's efforts to protect the general public from exposure to hazardous waste materials has been, at best, meek.

From the Administration that gave us ketchup as a vegetable, and last week suggested that Americans protect themselves against ultraviolet radiation not by trying to save the ozone layer but by a wider use of hats, sunglasses and sun-screening lotions, I'm wondering whether today EPA will recommend that we protect ourselves from hazardous waste in the ground by wearing heavier socks.

The American public is deeply concerned over hazardous wastes contaminating their drinking water, polluting their streams and dirtying their air. The overwhelming public support for the Clean Air and Water Acts indicates the strong feelings people have about this issue.

Since 1984 when Congress directed the Administration to find a solution to the hazardous waste problem, much has been learned yet little has been done.

As with most environmental issues, we have come to realize the difficulty of protecting our environment in a society as industrialized as ours. There are no easy solutions. And while there are no easy decisions, there are correct ones.

We must remain committed to protecting the environment and our citizens from hazards we understand today and, to go further, from hazards that time and technology have yet to reveal to us.

That is why we must approach the hazardous waste problem in a fashion that will solve the problem in the shortest amount of time at the best possible price.

That does not mean we look for the cheapest way out of this problem, nor the quickest way out. We must find the best solution to the problem of hazardous waste.

Today I am not convinced that EPA shares that goal. They have proposed regulations that would permit the dumping of hazardous wastes into the ground that are 10,000 times dirtier than allowed under current clean water standards. If we can't put it in the water, why should we permit these wastes to be dumped into the earth, where it can harm water tables, the soil, and eventually people?

The EPA would give some producers of hazardous waste extra time to develop or build proper disposal facilities. Does that allow more poisons to be dumped into the ground while at the same time poisoning the market for the hazardous waste treatment industry? This is an important question.

And are we going far enough? Is letting a little, or low concentrations of waste, into the ground only a "little bad". Are we in a way telling people that it's bad to drink chlorine bleach but okay to drink pool water? Do we really know enough about the long term effects of hazardous waste dumping, and if not, how do we decide how much risk with which we can live?

As we review RCRA we need to examine these and other questions. The public has told Congress in no uncertain terms that it wants the U.S. government to protect the environment. I am unwilling to accept anything less than the most vigorous enforcement and thorough review of our environmental laws.

It is also my belief that when it comes to the environment, in most every instance, government action is required to protect our resources before its too late. We have identified the problem of hazardous waste, and we must take steps to encourage movement toward solutions.

We have an emerging hazardous waste treatment industry; it should be nurtured and expanded so that we develop the capacity to treat all types of hazardous waste.

Now, I would like to stop the dumping of all hazardous wastes—in any concentration—into the environment tomorrow. But I know that isn't possible. We enjoy many benefits from our industrial society, and we don't have the capacity nor the technology to detoxify all these hazardous substances it produces.

But the problem has been identified. And Congress has set ambitious goals for the treatment of hazardous wastes. The people have demanded it, and we are here today to see that their wishes are carried out.

As with most environmental issues, we have come to realize the difficulty of protecting our environment in a society as industrialized as ours. There are no easy solutions.

Senator Reid.

OPENING STATEMENT OF HON. HARRY REID, U.S. SENATOR FROM THE STATE OF NEVADA

Senator REID. Thank you, Mr. Chairman.

I appreciate the opportunity to participate in this morning's hearing on the status of the Environmental Protection Agency's implementation of the land disposal restrictions mandated by the 1984 amendments to the Resource Conservation and Recovery Act.

I would like, as you have, to welcome the officials from EPA and other interested parties to the hearing this morning.

Mr. Chairman, as you may know, the safe disposal of all types of hazardous waste is of great importance and concern to the people of Nevada. We have been a dumping ground for much of the Nation's waste for a long time.

This morning, I had planned to make a tongue in cheek comment that, for once, I was glad Nevada did not have a coastline or it, too, would have been visited by the wandering waste barge of Islip. However, I am not able to do that, because I have here a letter from a Supervisor of the Town of Islip, New York to the Governor of the State of Nevada asking whether Nevada would be able to accept the waste from the Town of Islip which is 1,000 tons a day of solid waste.

So, I can't joke about that, because Islip, among others, wants to place their waste in Nevada.

I would, Mr. Chairman, ask that the letter to the Governor of the State of Nevada dated May 1, 1987 from Frank Jones, a Supervisor of the Town of Islip, be made part of this record.

Senator BAUCUS. Without objection.

[The letter referred to follows:]

TOWN OF ISLIP,
OFFICE OF THE SUPERVISOR,
May 1, 1987.

Hon. Richard H. Bryan,
Capitol Building Executive Chambers, Carson City, NV

DEAR GOVERNOR BRYAN: As you are by now probably aware, the Town of Islip (pop. 300,000) is in the midst of a severe solid waste disposal crisis. The private sector is currently attempting to deal with the transport and disposal of approximately 500 tons/daily of Islip commercial waste at out of state sites. The continuing odyssey of the tugboat Break of Dawn, with its barge of 3,100 tons of this waste, is an apt measure of their difficulties.

No local disposal option for this waste is currently available, and landfill capacity for our remaining 500 tons/daily residential waste is rapidly depleting.

We are now engaged in discussions with Governor Cuomo, the New York State Department of Environmental Conservation and the New York State Legislature to find a solution to this problem. Due to the accelerating pace of events and greater public awareness nationwide, it is imperative that we reassess the feasibility of out of state waste disposal.

Please advise as to the following:

Given your state's current available landfill or other disposal capacity, as governed by your regulatory framework, can your state accept any significant fraction of Islip's 1000 tons/daily solid waste generation at the present time? Is it probable that you will be able to do so over the next three (3) years?

We urgently need your candid and practical assessment as soon as possible.

We greatly appreciate your consideration and cooperation in helping to resolve this grave problem.

Very truly yours,

FRANK R. JONES,
Supervisor.

Senator **REID**. So, Mr. Chairman, I think this shows the problems that we have in this country.

Our Governor rejected the request of the Town of Islip. This does not in any way take away from the problem that the Town of Islip does have.

But I think, Mr. Chairman, that we have to look at—and Nevada feels strongly about this—that States must take responsibility for the wastes which they produce, and that includes nuclear waste. According to Nevada environmental officials, Nevada produces some 6,000 tons of hazardous waste each year. Yet, the State of Nevada provides a final resting place for over 200,000 tons of such waste.

Much of this waste comes from our neighbor, California, which has long had the most stringent land fill restrictions in the country. I think that speaks well for the State of California. Their definition of hazardous waste has differed significantly from most States.

Subsequently, much of this waste they classified as hazardous and could not be buried within their State has been shipped to Nevada where it could be legally buried as non-hazardous waste. Since many of the wastes that Nevada receives are from the so-called California list, I am especially interested in today's testimony and in EPA's anticipated July 8 decision.

Again, Chairman Baucus, I appreciate having the opportunity to be at this hearing, but, especially, I think it is good that you and the staff arranged this hearing in the timely fashion that you have.

Senator **BAUCUS**. Thank you, Senator.

Senator Lautenberg.

OPENING STATEMENT OF HON. FRANK R. LAUTENBERG, U.S. SENATOR FROM THE STATE OF NEW JERSEY

Senator **LAUTENBERG**. Thank you, Mr. Chairman.

I, too, commend you for holding this hearing today on the implementation of RCRA waste disposal, both hazardous and non-hazardous.

This is a key issue facing our country. The infamous "barge de la garbage," the Islip garbage barge, vividly dramatized the problem. And for a moment, Senator Reid, I do wish you had a coastline, because I was out fending off the anchoring of this infamous barge on our shores. I was in the harbor of the Hudson River, and saw that huge eyesore first hand.

That barge has become a monument to man's inability to deal with a real problem. It is an ugly sight and doesn't smell like French perfume.

We succeeded, with a lot of pressure, in keeping that barge from mooring in our waters.

But we have far to go in answering the question that it raises: how is the country going to deal with the growing waste crisis?

Today, I know that we will be examining RCRA's land ban program.

Another tool that we have to devote significant attention to once and for all is waste reduction. We can do a lot more in this country. We have to find ways in the factories, in the plants, in the homes, in the buildings, to cut down or eliminate the creation of material that is potentially hazardous.

We need to provide information and incentives to companies who use waste reduction technologies. We need to provide technical assistance to waste generators to show them ways to reduce and eliminate waste production.

We also have to assure that our current hazardous waste programs such as RCRA and Superfund are implemented aggressively.

Mr. Chairman, as Chairman of the Superfund and Environmental Oversight Subcommittee, I look forward to working with you on this important effort. Superfund and RCRA have important links for taking on the Nation's hazardous waste challenge.

The proper implementation of RCRA's land ban provisions will be a key to preventing Superfund sites from ever being created. RCRA, like the reauthorized Superfund program, calls for the development of new technologies to treat hazardous wastes. It is important that we encourage our technological development and application.

Once again, Mr. Chairman, I commend you for holding this hearing today. You have assembled a good array of witnesses with a variety of perspectives. Later on, I look forward to welcoming one of our people from New Jersey.

Again, I am pleased to share this review with you.

Senator **Baucus**. Thank you, Senator.

Our first witnesses are EPA's Dr. Win Porter and also Ms. Marcia Williams. Dr. Porter is the Assistant Administrator for the Office of Solid Waste and Emergency Response. Marcia Williams, I think, heads that office.

Dr. Porter, why don't you proceed?

STATEMENT OF DR. WINSTON PORTER, ASSISTANT ADMINISTRATOR, OFFICE OF SOLID WASTE AND EMERGENCY RESPONSE, ENVIRONMENTAL PROTECTION AGENCY ACCOMPANIED BY MARCIA WILLIAMS, DIRECTOR, OFFICE OF SOLID WASTE MANAGEMENT; AND LISA FRIEDMAN, GENERAL COUNSEL FOR SOLID WASTE AND EMERGENCY RESPONSE

Dr. **Porter**. Thank you, Mr. Chairman.

It is a pleasure to be here.

What I would like to do today is briefly summarize my testimony and then submit the entire testimony for the record.

Senator **Baucus**. Without objection.

Dr. **Porter**. As you indicated, I have with me Marcia Williams and Lisa Friedman who will be happy also to respond to your questions as soon as I have finished my summary.

First I will give you an overview of the land disposal ban situation and then tell you where we are with respect to each of the pieces.

As you know, the 1984 hazardous waste amendments prohibited land disposal of certain chemicals beyond specified dates unless the waste could be treated by a specified method or to a specified level, or a petition could be submitted which indicated that there would be no migration of hazardous constituents as long as the waste remains hazardous.

The law also laid out a process of capacity extensions where either at a national level or on a case by case level, we could grant capacity extensions if there do not appear to be treatment capacity for the waste in question.

There also were treatability variances if a petitioner could demonstrate that in fact they were treating their waste using the best available technology and simply couldn't achieve our levels. We could consider a variance in that regard.

The law also specified three groups which I want to cover briefly, the first group being solvents and dioxins on which the effective land disposal restriction date was November, 1986. We met that statutory deadline, and I will discuss in a minute where we stand on that.

The California list is the next land disposal restriction group that is coming through. That effective date is next month, July, 1987. We expect to meet that date also, and I will talk in a little more detail about that.

Finally, of the remaining hazardous wastes that are listed or that are characteristic wastes under RCRA, over 300 chemicals and over 100 waste streams are to be worked off one-third at a time, culminating in a final date of May, 1990.

Let me summarize, then, by starting with the solvents and dioxins rule.

As I said, we met the statutory date of November, 1986. We set treatment levels for all solvents and dioxins. We granted capacity extensions, however, for small quantity generators, for dilute solvents, and dioxins. We also set a capacity extension for corrective action wastes under RCRA and Superfund with respect to soils and debris.

I think it is important to point out, however, that effective immediately last November 8, 1986, concentrated solvents were restricted from land disposal. That is, the regulated community had to treat concentrated solvents immediately, and we think that encomposed nearly 90 percent of all the waste solvents.

So, while there were a number of extensions in specific areas, particularly dilute areas because of lack of capacity, in fact, most of the solvents were captured right away.

I am very concerned about the dioxin waste because, while we granted a capacity extension we frankly don't see a lot of capacity coming on line with that right now.

Let me move now to the California list. We are in the final rulemaking process. We have not made a final determination, but I want to give you some indication today of the Agency's direction with respect to the July, 1987 deadline.

This list includes certain liquid hazardous wastes which contain cyanides, metals, and PCBs, as well as corrosives and liquid and non-liquid halogenated organic compounds. As you recall the law, has, for this particular list, concentrations that are statutory limits which are prohibited from land disposal unless EPA determines that they are not protective of human health and the environment based on a demonstration that there will be migration of hazardous constituents. In this case you can lower the concentrations.

We requested public comment on our proposal to maintain the statutory limits with the possibility of lowering the levels of some of these based on the comments we received. We were considering both the toxicity of these compounds as well as their exposure route, and we were interested in receiving more dialogue on that.

Now I will discuss the direction that the Agency may take—and I have to stress that this is what we are considering; it is not final, but I think we have a pretty strong indication of where we are heading. We are probably going to go final with the statutory language on corrosives and PCBs. That is, we will deal with them as indicated in the law.

For high concentration halogenated organic compounds, we would finalize the best demonstrated available technology based on incineration except that we would grant a two-year capacity extension, because we don't believe there is sufficient capacity yet. On the other hand, we are going to seek new data on that. There has been some data that has come to our attention recently that maybe in fact there is more capacity than we first thought.

So, probably when we go out with our final rule in July, we will seek new data on that issue.

We will finalize the more dilute streams of halogenated organic compounds, chlorinated compounds, or HOCs. These are typically waste waters. There will be no extension with respect to capacity there.

Now, for the cyanides and metals, where there has been a lot of contention on regarding what should be the levels, we may in all likelihood propose to let the hammer fall, so to speak, at the levels which are in the statute. But we may propose, again in July, to lower these levels and publish new information for public comment one more time, on whether in fact these levels should be lowered. We will continue that process, in all likelihood, this summer.

Now, let me discuss the remaining chemicals, the so-called thirds, where we have to deal with these in one-thirds. There are three deadlines and these 300 or so chemicals and 100 waste streams will be prioritized according to those that have the highest exposure. They will be proposed first.

The final dates for the first third is August 1988, the second third is June 1989, and the final list on May of 1990. So, we will be proposing the thirds according to that time schedule.

Again, we are on schedule. We expect to meet all these statutory deadlines.

That is a quick overview of the situation. It is a very big program. We have, for example, about 30 full-time equivalents working on this facet of the program about $8 million in contract money just this year. We have additional backup for other years in terms of our effort.

I think the land disposal restriction program is going to fundamentally change how hazardous wastes are handled in this country. What the Congress has said and what we are trying to implement is the concept that waste will no longer be land disposed without either treating the waste ahead of time or having a petition that states there will be no migration as long as the waste remains hazardous.

We have a very extensive outreach program. I am very concerned about this program in the sense that it will affect many people and many industries both large and small, and enforcement is going to be difficult.

Therefore, we have a very extensive outreach program to let small businesses and others know the requirements prescribed by law. We will be spending a lot of time on our outreach program.

We have conducted some 50 inspections recently at generator sites and are trying to move aggressively in enforcement where people are simply not abiding by the law in place for solvents and dioxins. We are trying to approach this from both ends of the problem. We will be dealing both with the generators of the waste and the land disposal operations to be sure they are certifying that the materials they are receiving are in compliance with this program.

So, Mr. Chairman, I conclude the summary of my testimony, and the three of us will be happy to respond to your questions now.

Senator BAUCUS. Thank you very much, Dr. Porter.

Ms. Williams, would you proceed?

Ms. WILLIAMS. I will just be here for answering questions. I don't have an opening statement.

Senator BAUCUS. Okay.

Senator Graham, we are happy to have you here. Do you have a statement?

Senator GRAHAM. Thank you very much, Mr. Chairman.

I have an opening statement to file for the record. I have no questions.

[Senator Graham's statement follows:]

OPENING STATEMENT OF HON. BOB GRAHAM, U.S. SENATOR FROM THE STATE OF FLORIDA

Mr. Chairman, thank you for the opportunity to hear testimony regarding land disposal bans under the Resource Conservation and Recovery Act. The 1984 amendments to RCRA address a very important aspect of sound waste management policy—that of phasing out the use of land disposal for hazardous wastes.

We have discovered over the years the liabilities associated with land disposal, often only after our groundwater has become contaminated or families living near a facility become ill. In my State of Florida, land disposal is of particular concern because of the high water table. Not only does this increase the risk of groundwater contamination, but it also allows very few suitable areas for the siting of land disposal facilities that can accommodate hazardous wastes. This brings into play the need to increase our focus on waste minimization and alternative waste management technologies.

In light of the upcoming termination of RCRA authorization in 1988, it is important that we review the work that EPA is carrying out pursuant to the land disposal ban provision of the Act. Thank you once again, Mr. Chairman, for the chance to participate in such a review.

Senator BAUCUS. Dr. Porter, the basic problem here is that EPA is moving very slowly. It is a complicated statute, and whether it is solvents and dioxins, the California list, or the others—and I know there are different implementation dates—but there is still a feeling that EPA has developed the disposal standards yet, isn't moving very quickly or quickly enough in permitting alternate treatment facilities, isn't encouraging that technology enough.

What is your response to that general feeling that a lot of folks have?

Dr. PORTER. Let me respond, Mr. Chairman, fairly generally. The RCRA amendments laid out a fairly massive program in 1984, and my view is perhaps a little different. I think we have made a lot of progress.

I sent a letter to the Congress about three or four months ago which outlines item by item where we stood on all the RCRA initiatives and statutory requirements. I must say we are certainly on schedule with the vast majority of them. We have made a lot of progress.

Senator BAUCUS. But before we know how much progress we have made, there is a basic underlying question, and that is how much toxic waste is there? That is just a census problem. And how many treatment facilities, for example, are there?

The data on how much waste exists and is generated is very, very vague. How are you developing that data and what census of procedures are you undertaking so that we know with sufficient certainty in fact how much toxic waste is being generated and how much is there broken down among the various kinds of toxic waste, not just generally, but take total dioxins, total solvents, and chemicals that are on the California list, and the thirds that you mentioned?

Dr. PORTER. Let me respond generally, and then Marcia Williams may want to respond a little more specifically.

We have a major study going on right now where we have sent out very detailed questionnaires to a very large part of U.S. industry that generates these wastes, and we are trying very hard to update our data base on that.

It is a difficult task because there are all kinds of wastes out there, some dilute, some concentrated, and so forth, with very large companies and very small companies. I would agree with you that this is a difficult issue, but we are right now updating our data base and Marcia Williams might want to discuss this in greater detail.

Ms. WILLIAMS. Let me mention a couple of things. The data that we have used to date to make the determinations of whether capacity exists or doesn't exist has primarily been from a major survey that the Agency conducted in 1981. That data clearly is not up to date and, as Dr. Porter said, we have already engaged in a massive survey to update the disposal industry, to determine what is being disposed of right now.

We are also in the process of looking at the companion piece which is what is being generated right now.

I think what is perhaps equally important to our efforts to collect this new amount of data, which should be coming in over the next 12 to 18 months and will be available for making the decisions on all the thirds land ban pieces, is that we are making some major revisions in the biannual report. That is something that we are doing in conjunction with the National Governors Association and the States.

The way in which we collect and display the information that is collected on a biannual basis—we will make sure that these data stay up to date?

Senator **Baucus**. When are you going to have this census this complete, by what date?

Ms. **Williams**. The new survey that we are doing?

Senator **Baucus**. Yes, the update of 1981. When did you begin it and when do you intend to complete it?

Ms. **Williams**. We have already begun it. We have a pilot in place.

Senator **Baucus**. When did you begin this?

Ms. **Williams**. The pilot study began several months ago.

Senator **Baucus**. Why so late?

Ms. **Williams**. It took us a fairly long time to put together what we considered to be a useful survey, and we would be glad to supply you copies of what these surveys look like. Because there are very large amounts of data we were trying to set up the survey in a way that individuals that would have to respond, would only have to respond to the pieces that were appropriate to them. We are trying to minimize the reporting burden and maximize the usefulness of the information.

We also had to design a statistically valid sample to collect this information.

So, the pilot data is beginning to come in now. The full data will be coming in over the next 12 months for the disposal industry.

Senator **Baucus**. So, you expect to have the data completely compiled 12 months from now. Is that right?

Ms. **Williams**. Yes, we will have the disposal industry data complete in time for the first third.

Senator **Baucus**. And that data will include about as good a census as one can get as to how much waste there is broken down in various categories and how much is being generated?

Ms. **Williams**. Yes.

Dr. **Porter**. Yes.

Senator **Baucus**. When will we have it analyzed, that is, in a way that is meaningful for the country?

Ms. **Williams**. Again, we will obviously be doing this in pieces, but for all the wastes that are covered in the first third of the land ban, we will have that analyzed prior to the proposal for the land ban in August of 1988. It will be available for public review.

Senator **Baucus**. On the California list, Dr. Porter, there is a charge that the EPA's testing procedure, the TCLP, as a laboratory testing procedure, by measuring the concentration in the leachate really vastly understates the degree to which these wastes are actually in the ground. What is your response to that?

Dr. **Porter**. We received a lot of comment on that and, in fact, have moved away from that test for purposes of the California list.

Senator **Baucus**. You have moved away from it?

Dr. **Porter**. Yes, that is correct.

Senator **Baucus**. So, how are you testing now?

Dr. **Porter**. Well, we are going to be testing more on a constituent by constituent basis for that.

Senator **Baucus**. You are testing the ground material or what are you testing? Do you actually test the material itself, the ground itself?

Ms. **Williams**. We will be using liquids for the metals. For the liquid wastes, we will be using liquids. For the PCBs and the halogenated organics, we will be using total constituents. We will be consistent with the test California is using.

Senator **Baucus**. And what is your response to the view of many of the treatment facility folks that they can treat to a much higher standard in order to protect human health and the environment, that the EPA should move more in the direction of these kinds of facilities because they can treat to a much higher standard?

Dr. **Porter**. As I indicated, Mr. Chairman, we are certainly looking at that.

Senator **Baucus**. I know you are looking at it. Why aren't you moving on it?

Dr. **Porter**. The problem is we have to go final on the rule, and when we go final on the rule, we are in all likelihood going to put out additional information on lowering those standards, because we think there is a good chance we will lower them. But we received a lot of comment both pro and con, and I am sure you will hear some of that this morning.

Senator **Baucus**. When did you go with the rule?

Dr. **Porter**. The California list rule will become final on July 8, that is, a month from now.

Senator **Baucus**. That is correct.

Dr. **Porter**. We are going to in all likelihood, go final with the statutory levels as proposed in most areas. With respect to the metals and some other pieces, we are going to put out additional information to in effect propose to lower them.

We have been advised by our legal counsel and others that we need to give people a chance to comment on some additional information that we didn't have in our original proposal, and I think we received a lot of comment which indicated we probably should lower them. We have been very concerned about that also.

Senator **Baucus**. But that is only with some. What about the others?

Dr. **Porter**. The others will become final.

Senator **Baucus**. Maybe we don't understand each other. I am asking, why aren't you moving more toward treatment facilities if you agree that they can treat to a higher standard?

Ms. **Williams**. The comments that came in in terms of the areas in which perhaps lower levels would be appropriate primarily related to metals and cyanides. It is that whole group of waste which is a very large volume of waste that this notice of data availability will go out suggesting that we lower those levels.

When we proposed the rule originally, we proposed to go with the statutory levels but asked for comment about lowering the levels. However, what we didn't have available at that time and what we will be making available in this new notice of data availability is the basis on which we believe—the treatment that would exist to get to the lower levels and whether or not the capacity exists to get to the lower levels.

So, this is the piece that will be going out for additional comment. We do not see a particularly long time frame between the publication of this notice of data availability and a decision on whether or not to finalize that. We believe that that can be done in a matter of a few months.

Senator **Baucus**. I think I better quit here. I'll come back next round.

Dr. **Porter**. Okay.

Senator **Baucus**. Senator Reid?

Senator **Reid**. Thank you very much, Mr. Chairman.

This is something I have always had a question about, and maybe as the chairman indicated, we don't understand. You have stated on several occasions about this survey that you send a questionnaire out to industry, and they fill it out and send it back to you. Is that right?

Dr. **Porter**. That is correct.

Senator **Reid**. Do we have any independent sources of checking whether or not the information they give us is valid?

Dr. **Porter**. We certainly check it ourselves. We will be going to individual industries.

It is difficult. We are talking about tens of thousands of people, potentially, who have to fill out these questionnaires, particularly on the generator side. We will have to independently audit at least a sample to be sure we have confidence in the data.

Senator **Reid**. There is question in my mind as to whether they are going to tell you how much toxic waste they have. It is like sending a questionnaire to a bank robber and asking how much money have you stolen.

It may not be the same category, but I just hope that we have some independent sources of checking to determine if the questionnaires that they have filled out are accurate, and you have indicated there are sources for doing that.

Dr. **Porter**. Yes. Mr. Reid. I was just checking with my legal counsel, but there are criminal penalties involved if people falsify that information. So, it is not something that people will take lightly, I hope.

Senator **Reid**. But still, we have independent sources of conducting our own surveys to determine if the information they supply is accurate?

Dr. **Porter**. Yes, and we also can come at it from other angles. For example, we are going to try to triangulate the problem a little bit. We know, for example, how much incineration capacity there is from commercial incinerators. There are only 15 in the country. They are easy to count. And there are other things where there is not a large number. There are only a handful of deep well injection sources in the country.

So, I think we want to kind of come at this from a couple of angles, and if things don't match, if people tend to say I am sending the following amount to off-site incineration, we add up those numbers, that doesn't come anywhere near the 15 incinerators that are receiving it, we obviously have a problem and we have to go back and look further.

Senator **Reid**. I understand.

Do you think it is possible for the 50 States to handle their own waste that they in effect generate?

Dr. **Porter**. I don't think it is possible, Senator Reid, for each State to totally independently handle their waste.

I might say that under Superfund study we are doing now, the three-year capacity survey we are doing as mandated by the new Superfund, that is precisely the issue we are trying to get at. That is, what is the national capacity situation.

Just to digress a second, in that law, what it says is that people have to assure us they have the ability to handle their wastes either in their State or in conjunction with another State or they don't get Superfund money. So, that is going to be helpful, too.

Senator **Reid**. Perhaps this barge that has received so much notoriety is a blessing in disguise, because it certainly points out to us a problem that exists. What are we going to do with the solid wastes and other wastes that are generated in this country?

I guess one of the reasons for this hearing is to determine what is being done in conjunction with these land disposal bans to solve the long-term problem. I assume you have a plan in mind to handle these problems of waste generation. Is that right?

Dr. **Porter**. That is right. One thing is that I will be supplying the Congress in the next few weeks is we put together a kind of summary of the hazardous waste system as we now see it in the country. It is sort of an executive summary type report which says here is the big picture on where things go. And, very important, frankly, is what is going to be the potential impact of these various laws and regulations.

We are working through some 38 regulations, for example, under RCRA, each of which will have an impact on the system. So, we are trying to work through that and also using the Superfund capacity studies and others to get some kind of a plan.

But, frankly, there is some kind of a law of supply and demand working out there, and there is also a situation with respect to these bans. But certainly what is happening is that people are having to go increasingly to treatment.

I might just make one more anecdotal comment that I think is interesting. We had 1,500 land disposal facilities in the country about a year——

Senator **Reid**. How many?

Dr. **Porter**. 1,500 hazardous waste land disposal facilities in the country a year and a half ago. We now have about 300 to 400 that are applying for a permit.

Senator **Reid**. In addition to the 1,500?

Dr. **Porter**. No, approximately 1,100 have closed. Rather than meet these new stringent requirements, we have already seen about 1,100 close.

Senator **Reid**. From your perspective, is that good or bad?

Dr. **Porter**. I think it is generally good. It did cause some concern initially with respect to capacity, but we haven't noticed much of a problem so far. In other words, people seem to be able to find alternative treatment and other capacity.

Senator **Reid**. Could you give us a brief view as to the future, as you see it, with this garbage barge floating around this part of the world? What is going to happen to the way that we dispose of solid waste in the years to come?

Dr. **Porter**. Well, let me distinguish a little bit between solid waste and hazardous waste.

Senator **Reid**. And I understand there is a difference.

Dr. **Porter**. Yes, solid and hazardous waste. But if I could discuss solid waste for just a minute, I have spent a lot of time talking about the barge and its implications. I think several things are going to happen.

One is I think we are going to have to get excited again as I think we were more excited in the 1970s perhaps on recycling. We certainly can do a lot more recycling of paper and other materials that will be helpful.

On the other hand, I think we are going to need both solid waste landfills and particularly incinerators and research recovery units. What we are trying to do is work hard on regulations and standards and technology transfer to be sure people have the ability to implement, particularly those incinerators.

In the large urban areas, while I think recycling can help a great deal, I think you are going to need those incinerators and research recovery units as well as good land disposal.

But just again one more number, there are 10,000 land disposal units right now in the country. Those are not going to go away tomorrow morning, and we are going to need them for quite a long time.

So, we have to be sure we have environmentally sound practices for land disposal, and incineration, and further we have to increase recycling.

I might just close by saying, Senator Reid, I am very concerned because I think what is superimposed on all of this, frankly, is the not in my back yard syndrome where it is going to be very difficult to locate new incinerators, and new landfills. I think it is going to be a problem we have to work on at all levels of government and the communities. It is not going to be easy.

Senator **Reid**. Thank you.

Senator **Baucus**. Thank you, Senator Reid.

Isn't it true, though, that Islip took back its own garbage?

Dr. **Porter**. They were going to do that. I will let the gentleman from New York comment further, but my understanding is that what they have now decided is that they are not going to take all of it.

Senator **Baucus**. They are not going to take all of their own?

Dr. **Porter**. They are not going to take all of it.

Senator **Baucus**. All their own?

Dr. **Porter**. Well———

Senator **Baucus**. I understood—we may correct it later—but I understood they are taking back part, not all, but the part they are taking back is their own.

Dr. **Porter**. I think that is what they think. They think they generated something like 40 percent or something and they will take back their 40 percent.

Senator **Baucus**. Okay. Thank you.

Senator Graham?

Senator **Graham**. What do you see as the Federal role in the partnership with communities and the States in moving forward with alternative disposal technologies?

Dr. **Porter**. Senator Graham, are you talking primarily about solid waste or hazardous waste or both?

Senator **Graham**. Both.

Dr. **Porter**. Okay. I think there are two things I would say. First, on the hazardous side, we have clearly carved out for the Federal Government and we have delegated some of this back to the States a strong enforcement role. We have the ability to enforce at hazardous waste sites, and that is a manageable number. As I mentioned, there are only 300 land disposal, there are only 15 hazardous waste incinerators, et cetera.

So, I think there is a strong need for Federal enforcement in some cases and, of course, State enforcement.

With respect to solid waste and again with respect to hazardous waste also, I see a very strong technical role for the Federal Government, technology transfer, to be sure people understand what is working in terms of technology.

And, of course, I see a regulatory role in the sense that, as we are doing under RCRA, we have to write a whole series of regulations. What should you meet in terms of deep well injection, what should you meet in terms of flotation standards, and on and on and on.

So, I think what we will be doing and are doing is writing a lot of standards and regulations which then we will try to work with the States particularly to implement. We have some 42 States that are authorized already in the RCRA program to run in effect most of their own RCRA program.

Marcia just sent me a note that I think is very important and let me just mention it. We think one of the things in terms of this partnership—and it is particularly true, in terms of the solid waste—is we think siting is largely a local issue. The thing that some people would like for us to do is to somehow have a federal presence in the siting or locating of individual facilities. We think that is primarily a local and State issue, and I think that is a very important part of the partnership.

Senator **Graham**. Do you see any Federal role financially in assisting State and local governments to meet this cost that is going to be associated with these alternative technologies?

Dr. **Porter**. Yes, Senator Graham. We put out about $66 million right now to States under the RCRA program where they—we have grants to them which help them to run the RCRA program. I think, though, when you look at particularly the solid waste program, it is a huge effort, and, frankly, we are thinking right now of what should be the federal role in that. It is not quite as clear what ought to be done there, because you are talking a lot of local and State involvement that is already in place.

So, I see a limited financial role, but I think more importantly I see a technical and a regulatory role.

Senator **Graham**. In your discussions with State officials and local officials with responsibility, have they identified any constraints or potential incentives that might facilitate their ability to meet their new responsibilities?

Dr. PORTER. Well, I think, certainly, money is always an issue, and I think it is fair to say the States would like to see us increase the grants and so forth, and we have done some of that the last few years. As I say, we have $66 million now in RCRA that goes to the States.

We are also, under Superfund, putting out monies, for example, in the leaking underground storage tank program. We have a trust fund of $500 million which will be going out to the States as additional grants under that.

I don't have the totals in front of me, but there is quite a large amount of solid and hazardous waste, particularly hazardous waste, monies going to the States. So, I think money is a constraint.

I think training is one aspect that has been identified, and we are trying to work very hard on training, because these are complicated concepts and issues. Perhaps one of the main things we spend time with the States and localities on is trying to set up training programs and things of that nature.

Senator GRAHAM. What did you say the grants last year amounted to?

Dr. PORTER. $66 million.

Senator GRAHAM. Which on a per State basis, assuming that the allocation was more or less in relationship to population, for my State, that would mean approximately $3 million, if that is the allocation. That is not very much money for a problem of the scale of this.

What proportion of the funds that have been made available through these grants have been used for technologies for disposal as distinct from that which has been used for enforcement and permitting procedures?

Dr. PORTER. I could supply you more detail on that for the record, but basically the monies we are putting out there are really sort of administrative and enforcement things to run the program. They are not earmarked for technology or something of that nature.

They are grants we give the States to say you have to—for example, permitting. These 300 land disposal units I mentioned—we have a real partnership with the States in permitting those. So, they are using these monies to help with their staffs on permitting and enforcement and issues like that.

There are some things in Superfund that relate more to technology, but not in RCRA.

Senator GRAHAM. So, is it fair to characterize the Federal role today either directly or through its grants to State and local governments as being in an enforcement and standard setting role as distinct from a role of assistance in provision of technologies or other methodologies to comply and beat the problem?

Dr. PORTER. We are trying to do some of that, too. For example, we are very interested now in waste minimization, and we are going to be doing some technology transfer in that area to show people what we think can be done in waste minimization.

Again, on the other part of our program, the Superfund program, we have an ability to do R&D work at Superfund sites, the so-called SITE program, where we are spending about $15 million this year on demonstrations of technology at Superfund sites.

So, there is a fairly strong technological component of this where we are trying to provide technology to the States.

Senator **GRAHAM**. Thank you.

Senator **BAUCUS**. Dr. Porter, a lot of States are in a real bind today with dioxins. They can't use landfills, but you have not given them guidelines for treatment facilities.

What is the answer? Why? The stuff is piling up.

Dr. **PORTER**. Well, we certainly have given them treatment levels in the solids and dioxin rule. Basically, we said if you can detect it in the leachate from this material, you have to treat it. You have to incinerate it. If you can't detect it, you can landfill.

You are absolutely right, though. There is a huge problem out there in the sense of people stepping forward or not stepping forward, as the case may be, to deal with dioxins. People with commercial incinerators, for example, are not breaking the door down trying to get those permits to burn dioxins.

Senator **BAUCUS**. What are you doing to help them out?

Dr. **PORTER**. Well, we are doing a lot of——

Senator **BAUCUS**. And how quickly are you doing it? By what date will it be done?

Ms. **WILLIAMS**. Again, the requirements for a facility to come in and get permitted for treating or disposing of dioxin are out there. They have been out there for some period of time.

The difficulty is—and we have made it very clearly known that we would give the highest priority to anybody that came in with an application to get permitted to burn dioxins.

The difficulty is no one is coming in. The pressures are such that people don't want to deal with getting a permit.

So, clearly, what we are trying to do is encourage people, but we can't—all we can do is respond when someone comes in with regard to the permit.

I should mention, of course, that——

Senator **BAUCUS**. So, what you are saying is States are not coming forward.

Ms. **WILLIAMS**. Well, it is not States.

Senator **BAUCUS**. Are you not encouraging the private concerns to come forward.

Ms. **WILLIAMS**. Again, States may be doing and probably are doing to some degree the same thing we are, which is trying to encourage it, but ultimately somebody in the business of disposal or treatment needs to come forward and say I am interested in getting some permits to do this.

Senator **BAUCUS**. I am just curious, Dr. Porter, what is your personal view of the future of treatment facilities? How quickly and to what degree do you think you could tighten up the land disposal criteria so that virtually nothing is disposed at landfills but rather is treated. What is your gut feeling on all this and what is your opinion of all this?

Dr. **PORTER**. I think, Senator, where we don't have this tremendous stigma issue such as we have in dioxins that people are going to come forward and have come forward rather quickly. We are trying to smooth some of the permitting processes. We are trying to deal with mobile treatment units where you can take them to different locations based on one permit within the State and sort of break some of the red tape.

Senator Baucus. Like the Islip barge.

Dr. Porter. No, we are thinking more of mobile incinerators and things that solve the problem, not create the problem.

I might say, Senator, also, though, that in the Superfund context, we can build units right on a site without a permit. In fact, we are looking at dioxin treating units ourselves on Superfund sites to treat those kinds of dioxin wastes ourselves on sites, because if you treat something on site in Superfund, that is, on the location of the problem, you don't need a permit.

Senator Baucus. So, you agree with the basic assumption of the statute, that is, we should move in this direction?

Dr. Porter. I am sorry, Senator?

Senator Baucus. You agree with the basic assumption or provision of the statute?

Dr. Porter. Yes, I think so. I think that the fundamental direction of treating things before they go to the land is sound.

Senator Baucus. So, in your answer to their charge that you are not moving quickly enough, your answer in part is, at least by Ms. Williams, is that they are not coming forward.

Dr. Porter. Well, as I said, I think dioxin is a special case. I think there is such a huge stigma attached to that that people mention the word in the local communities and everybody runs the other direction. And they have a very hard time wanting to come forward and get permits and so forth.

With most other things, solvents and various kinds of metals, these are sort of ordinary treatment processes that we do every day, and I think there is no big problem with that.

Senator Baucus. I am just curious—how many new applications for treatment facilities or incinerators have you received since November of 1986? How many applications?

[The information requested follows:]

Eighty-one permit applications have been received by EPA since November 1986.

Dr. Porter. We could get that for you. There are about 300 incinerators. I keep mentioning 15. I need to correct one thing. There are about roughly 300 hazardous waste incinerators in the country all but 15 of which are on the site of private companies. That is, they are treating the waste of that company. About 15 are commercially available.

And a lot of those people, I think, are going to be coming in with permit modifications to try to expand capacity and do other things.

Again, it looks like for the concentrated waste they are able to handle them.

Senator Baucus. Would you just answer the question first, please? How many applications do you think for treatment facilities and incinerators since November of 1986?

Dr. Porter. I would have to check that.

Ms. Williams. We will have to provide that for you, but I think an equally important question and piece of the answer to that question has to do with in existing facilities, how many requests have come in to modify what is at the current facility to add additional treatment capacity, and there is a fair amount of that that is coming in at facilities that already exist.

Senator **Baucus**. And of the applications, how many have been permitted? What percent?

Dr. **Porter**. We would have to provide that.[1]

Senator **Baucus**. Do you have a rough guess, a rough feel?

Dr. **Porter**. Well, not many. I will tell you what guess I can give you or what indication I can give you. To my knowledge, there are very, very few, if any, that have come in with brand new applications or brand new sites. Again, we are faced with a problem of locating brand new facilities.

I think what most people are tending to do, both commercial and private, they are tending to say if we have an incinerator now, can we expand it, can we make it more efficient, can we get more through, whatever. What they are not generally doing is saying we want to find a piece of clean ground and build a new incinerator, because, again, history is showing here that is very difficult to do.

Senator **Baucus**. I hear the words. I don't know if I hear the music. My view so far is that you can do a lot more and move much more quickly and much more aggressively.

Dr. **Porter**. Well, Senator, we are certainly going to try to do everything we can. I will be happy to give you more detailed briefings as we go along on where we stand on these pieces, because, you know, it is a big problem. We are trying to do everything we can, but we also need people who are willing to come forward and do these things.

I will say this, though, that one thing I have noticed—sort of anecdotally—that hazardous waste is not backing up in the streets. People are treating it and handling it since these various bans are coming in place.

So, I think what we are trying to do to some extent is understand what is already happening. It is not something we can necessarily manage or micro-manage or cause to happen. Part of it is this thing that entrepreneurs and others are getting into this business.

Senator **Baucus**. In addressing the NIMBY problem, isn't there an alternative that people face and States face that is either dispose of it in landfills or treat it or ship it out? In a certain sense, it is a zero sum game. The Islip is beginning to point toward that.

Dr. **Porter**. Yes.

Senator **Baucus**. I know the problem of treatment in the sense that folks don't want treatment facilities in their back yard, either. But isn't it a question of the lesser of two evils, either put it in land fills or treat it? Isn't that therefore a function of education, in part, as more folks realize that it is safer to treat the stuff than it is to dump it where it gets in the groundwater?

Do you agree with that statement or do you disagree?

Dr. **Porter**. Definitely, Mr. Chairman, I do agree with it. I think the issue you have, though, is I think when faced with a very clean-cut alternative in a county, let's say, or community where someone says do we put a treatment device or a landfill at this location, I think many people would say it sounds better to treat it than, to use your word, just to dump it.

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[1] The material referred to has been retained in Committee files.

Unfortunately, that is not often the choice people have. They have a choice of do you want a landfill in this county or an incinerator three counties away?

Then that choice is easy. We want the incinerator three counties away.

If I could frame the issue that way, I think you are right, but the problem is you don't always have an apples and apples at that location. People tend to be against what is in their back yard whatever it is.

We have had, for example, a tremendous amount of opposition on incinerators, people not wanting new incinerators. In Superfund, that has been a real problem, for example, because we are trying to do permanent treatment and so forth.

Senator **BAUCUS**. Thank you very much, Dr. Porter. I am way over my time.

Senator Graham.

Senator **GRAHAM**. No, thank you, Mr. Chairman.

Senator **BAUCUS**. Thank you very much, Dr. Porter. We appreciate it.

Dr. **PORTER**. Thank you, Mr. Chairman.

Senator **BAUCUS**. Our next panel consists of Mr. Langdon Marsh, Executive Deputy Commissioner for the New York State Department of Environmental Conservation; Mr. William Librizzi, Deputy Assistant Commissioner for Hazardous Waste for the New Jersey Department of Environmental Protection; and Bill Child, Manager, Division of Land Pollution Control of the Illinois Environmental Protection Agency.

Mr. Marsh, welcome.

Mr. **MARSH**. Thank you, Senator and Senator Graham.

I sent down copies of my testimony. I won't read it, but I would like to summarize it briefly.

Senator **BAUCUS**. Without objection, the written testimony of each of the three of you will be included in the record.

STATEMENT OF LANGDON MARSH, EXECUTIVE DEPUTY COMMISSIONER, NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION

Mr. **MARSH**. I guess I should start out—I see Senator Reid is no longer here—by saying that we did have a great deal to do with the infamous barge, and I think it might be worthwhile just to start by saying that I think there are a number of lessons that can be learned that are applicable to both the solid waste and the hazardous waste crisis from that fascinating experience.

The reason why the barge was set into motion, so to speak, was because the State of New York had taken some very strong actions to prevent the expansion of a landfill in the Town of Islip which we felt would have jeopardized the groundwater situation there over a sole source aquifer. We believed that there were better alternatives that the town could have taken, including developing alternative sites outside of the recharge area that was the central portion of the aquifer or trans-shipping the waste out of town until such time as a resource recovery facility could be completed.

So, the ultimate origin of the problem was an effort on the part of the State to protect the groundwater in that area, and through a variety of intermediate decisions by the tow, the decision was made that the commercial waste in the town must be handled by the private sector, the generators of that waste and the carters, and it was the carters who actually made the decision to invest in this crazy scheme to try to send the waste to North Carolina and with all the interesting follow-on problems that that created.

I think another lesson based on the composition of that waste—it has been determined by State and city officials to be non-hazardous, at least as far as can be determined. It can't be guaranteed that there aren't some hazardous constituents in that waste as there probably are in most municipal solid waste that is disposed of today, but I think it is quite likely that about 70 percent or more of that waste is pretty benign recyclable materials, chiefly paper from offices and so on.

I think that perhaps the best thing that could happen to that barge if there was some way that it could be brought off is to demonstrate that virtually all of that material is recyclable and there is some exploration of that possibility going on right now.

I think, turning to the hazardous waste situation, as we talk about the land burial restrictions today, we certainly believe that a great deal of the waste that is generated today can be avoided. Waste minimization, as Mr. Porter mentioned, is certainly the direction in which Federal and State policy ought to go in terms of regulation and in terms of technology transfer to assist industry in reducing the amount of waste that is ultimately produced that then has to be either treated or disposed of.

We think the direction of the EPA in gradually tightening the restrictions on the land burial as required by the RCRA amendments is a good one. As my testimony indicates, we believe that the effort could go a lot farther, that the wastes that are covered by the restrictions are relatively small in number and need to be expanded considerably. I was glad to hear that EPA is moving away from the TLCP test which we believe does not adequately screen out or cover in many of the wastes that are problematical.

So, I think that there is some progress certainly being made here in terms of moving forward. We think that EPA should do the things that Mr. Porter indicated would be done on the July promulgation of the list, but then we need better testing procedures and we need an expansion of the coverage of the hazardous waste that will be listed, and that should happen as rapidly as possible.

Senator BAUCUS. Thank you.

Next, Mr. Librizzi, why don't you proceed?

Mr. LIBRIZZI. Yes, good morning.

Senator LAUTENBERG. I wonder if I may, Mr. Chairman, just give a word of welcome to Mr. Librizzi who represents our State, New Jersey, and state that we think it is first and foremost in so many things, and one of those is the way we attempt to handle our hazardous waste problem.

I am pleased to welcome Mr. Librizzi here, and thank you for the opportunity.

Senator BAUCUS. Thank you, Senator.

With that welcome, you may proceed.

STATEMENT OF WILLIAM LIBRIZZI, DEPUTY ASSISTANT COMMISSIONER FOR HAZARDOUS WASTE, NEW JERSEY DEPARTMENT OF ENVIRONMENTAL PROTECTION

Mr. LIBRIZZI. Thank you.

We support the intent of Congress that reliance on land disposal must be reduced. In New Jersey, we have an aggressive program which, in concert with the Federal initiative, can accomplish this policy.

The activities in our State are several. We have a multi-agency approach towards waste minimization which the Senator mentioned in his comments and on which Langdon Marsh just commented, as did Win Porter. I guess everybody feels that waste minimization is a focus that we need to be taking rather aggressively.

Our program enlists the expertise of both the public and private sector. I might comment in regard to that—from a national perspective as well as the State perspective, the waste minimization program needs to be far more aggressive than it has been. As we proceed to ban waste from land filling and move towards treatment, it is quite obvious that alternatives such as waste minimization ought to be developed and ought to be made available to industry.

We need more aggressive activity in that particular area. Funding from the Federal sector to allow States to develop core programs and technical assistance in regard to working with industry as well as States as they begin to carry out their programs are important, and research and studies that are necessary to not only develop the technologies that would lead towards waste minimization successes but also to show and demonstrate far more clearly that waste minimization is a benefit across the board in the field that we are dealing with.

Under the Hazardous Waste Facilities Siting Act, New Jersey is working through the process of siting incineration capability which will destroy wastes which otherwise would have been land disposed. We are also in this process working on siting an above ground secure landfill to handle incinerator ash, treatment residuals, and those wastes not amiable to treatment.

So, we are moving to put into place alternatives for the wastes that will be banned.

This process is under the leadership of a 9-member siting commission which has developed siting criteria, prepared a major hazardous waste facilities plan which, by the way, is in the process of being updated, and has established a hierarchy of hazardous waste management that is consistent with Congressional policy; and that is source reduction, recycling, recovery, treatment and incineration, and, finally, secure land filling.

I think the concept of this hierarchy is a good one in that it establishes a comprehensive, broad hazardous waste management approach. As we look at such activities as the land ban that we are talking about today, we have to continue to look at it in context of this comprehensive approach which, by the way, waste minimization is as part thereof.

In March of 1986, the Commissioner of our New Jersey Department of Environmental Protection signed a regulation that prohibits the final land disposal of discarded commercial chemical waste. This particular aspect of our activity relates to what we are talking about. In fact, it bans PNU wastes that are defined under RCRA. So, we have looked at starting to ban in terms of the universe of the waste required for land banning by the Federal program.

So, obviously, these measures, we believe that we are conducting in the State, as I am sure many other States will attest, and the 1984 amendments to RCRA will certainly retard the use of land disposal. We need to move continually; we need to move as aggressively so we can to put these regulations in effect to complete the activities of this land ban restriction requirement.

You would expect that we would see an impact on land restrictions based upon the work that we have already accomplished, and this issue regarding the adequacy of data versus the waste generation capacity which was discussed earlier with Dr. Porter is one that is of concern to us as well.

We think we need a good data base to make some of the decisions that are being made through our regulatory process at the Federal level.

In terms of impact, though, it is kind of interesting. We did take a look at some of our data that is available using the manifest system which we feel is a very good system of keeping track of waste as it moves through the process. We see that if you look at our manifest data for 1985 and 1986, we do in fact see reductions in waste disposal at landfills, and that would be encouraging to see that.

However, it also showed the reduction of waste in other disposal facilities such as incineration and treatment. So, the data does not indicate to us anything that would be very definitive.

There possibly could be several reasons for that, and I think we need to look at the data as it is developing and particularly the 1987 data and see just in fact what is happening out there in the field as we begin to put into full effect the restrictions. It could be the possibility that maybe there is indeed impact by our regulatory processes at the Federal level and at the State level driving industry to look at waste minimization, look at recycling, and look at reducing the amount of waste that they produce.

It could be possibly that the generation of the waste for economic reasons is going down. It could also be that generators are using different classification codes.

We think we need to look at this kind of data, and 1987 would be another good base of data which we should be looking at.

In looking at some of the issues that were raised in the invitation to us to attend——

Senator Baucus. I am going to have to ask you, Mr. Librizzi, to summarize the rest of your statement.

Mr. Librizzi. I am sorry.

Well, we would say that looking at the California list in terms of it being a procedure that we would suggest, we would caution that it may not be the best way to protect public health and the environment. It may be a good start in terms of looking at getting something on the street to start the process, but we think that we need to carefully look at that and continue to evaluate the health implications associated with those standards.

We think the levels will necessarily have to go down.

Senator BAUCUS. Thank you.

Mr. Child.

STATEMENT OF BILL CHILD, MANAGER, DIVISION OF LAND POLLUTION CONTROL, ILLINOIS ENVIRONMENTAL PROTECTION AGENCY

Mr. CHILD. Good morning. Thank you, Mr. Chairman and members of the committee.

As you may know, Illinois is a major producer of hazardous waste, producing nearly one-half billion gallons each year in our State. Illinois has delegated authority to administer the RCRA program and the Superfund program and the UIC program. We are also charged with enforcing provisions of the Illinois Environmental Protection Act and the Pollution Control Board rules and regulations.

Over the last several years in Illinois, the General Assembly and the Pollution Control Board have imposed severe restrictions on the disposal of hazardous waste within the State of Illinois, and those restrictions may be summarized as follows:

In 1981, an amendment to the Environmental Protection Act prohibited disposal of hazardous waste in landfills effective January 1 of 1987 unless no reasonable alternative is available. In 1983, that ban was accelerated and all liquid hazardous waste was banned from land filling in Illinois.

Also, the Pollution Control Board adopted rules which prohibited the land fill of organic solvents containing chlorinated compounds.

Then, the Illinois EPA also had the authority to prohibit by regulation the land burial of specific categories of hazardous wastes.

Illinois has also set up a waste hierarchy similar to the Federal hierarchy in which source reduction and waste minimization is our number one priority in the State of Illinois, followed by recycling and reuse, incineration, and our last alternative in Illinois by legislative mandate is land filling.

With regard to our ban, in contrast to the multi-phase Federal prohibition, the Illinois land ban is not an absolute disposal ban. Under the law, the Illinois EPA may authorize land disposal of hazardous waste after the generator has demonstrated that, in light of technological feasibility and economic considerations, the waste cannot be reasonably recycled for reuse, incinerated, or chemically, physically, or biologically treated to neutralize the waste to a non-hazardous state.

About the effect of the land ban in Illinois, let me give you a few important observations. The volume of commercial landfilled hazardous waste dropped about 35 percent, actually 39 percent, during the first quarter of 1987 as compared with the first quarter of 1986.

The number of landfill permits for hazardous waste is one-half the number of a year ago.

The types of waste now approved for disposal are less of an environmental hazard and generally more stable in a secure landfill than the wastes that were disposed of a year ago.

You may ask, where did the waste go? Much of the waste is defined as characteristically hazardous, that is, it is ignitable, corrosive, reactive, or EP toxic. All of that waste is currently being treated to render the waste non-hazardous. So, that hazardous waste stream has disappeared from the State.

Some of the waste is being recycled or reduced through waste minimization programs. Finally, some of the waste is being diverted and shipped to other States with less stringent requirements.

The State interface with the Federal ban—essentially, the hazardous wastes produced by the U.S. Environmental Protection Agency for restriction under the Federal land disposal ban are already subject to the Illinois landfill ban restrictions. As these restrictions are promulgated by the United States EPA, the Pollution Control Board will adopt the regulations as State rules while keeping in place the required and appropriate State regulations.

The California list proposal as part of the rulemaking is not expected to significantly impact hazardous waste management in Illinois. The California list imposed restrictions on liquid wastes which are already banned in the State.

The proposed requirements for waste stream concentration tests rather than a toxic constituent test, when adopted, would just be included as one of the Illinois provisions. It would just act as a supplemental criterion for disposal of hazardous waste within the State of Illinois.

Is there enough capacity? Treatment capacity for the banned waste has not been an issue in Illinois. We have clearly seen sufficient capacity within the State. From 1980 to 1985, statistics have shown a steady decline in the percentage of hazardous waste disposed of in off-site commercial landfills. Regulatory and economic incentives have helped to expand treatment and recycling capacity in Illinois by allowing these facilities to better compete with landfill disposal facilities.

Furthermore, many land disposal authorization requests reviewed by the Illinois EPA are for treatment residues which no longer exhibit hazardous waste characteristics as defined by EPA.

The last point I would like to make is I would like to urge that the U.S. EPA help the States with the implementation of subtitle B or the solid waste aspects. The barge situation has shown a problem that is nationwide, and Illinois certainly has the same problem with solid waste and what to do with this huge solid waste problem.

Thank you.

Senator BAUCUS. Thank you very much, gentlemen.

Why is it that your States have tougher standards and are moving more expeditiously than is the Federal Government?

First of all, I assume that you are moving more quickly, more expeditiously. You are moving more toward treatment. You have more stringent land disposal requirements. You are moving toward waste minimization more than is the EPA.

What accounts for that? Is industry leaving your State as a consequence or is industry staying in your State? What effect are your more stringent standards having on the waste generators, for example? Are they crying? Are they upset? Are they living with it, getting along with it?

What I am driving at is your best explanation as to why you are more stringent than the Federal standards and what advice you have for us here in this committee and for EPA to move to more aggressively and progressively protect the environment, particularly human health when it comes to toxic waste problems.

Who wants to take a crack at that first?

Mr. **Marsh**. Well, I will go first.

I can't explain exactly in full detail what the reasons might be. I think we felt the public demand in the early 1980s to phase out landfilling. The Governor of our State established a task force of individuals drawn from business and environment and local government to try to wrestle with the policy of how we should deal with our hazardous wastes.

We had an abortive attempt under a prior administration to establish a treatment facility run by the State, and that was beaten back not only by the NIMBY syndrome, but I think even more importantly, by a sense that there was not a clear definition of why a particular type or level of treatment and disposal landfill capacity was needed.

Therefore, that forced the State into developing what now I believe over 20 States have done which, as Mr. Librizzi mentioned, in effect a hazardous waste disposal plan with a hierarchy of waste minimization, source reduction, recycling, et cetera, with landfilling at the bottom.

So, at about that time, because of this public pressure, we established the two-phase land filling restriction which went into full effect back in March of 1986.

The effect has not been to drive industry out of the State. There have certainly been complaints about the high cost of disposal because what has happened is that industries, and particularly the smaller ones, have had either to pay higher costs for treatment within the State or to ship their wastes to facilities out of the State with the attendant higher transportation costs.

We have noticed the same things as were mentioned by the other two speakers that there has not been a great increase in hazardous waste generated. There has been a decrease, chiefly because of the desire on the part of industry to minimize their liabilities and their costs and, therefore, try to neutralize wastes before they leave the plant site.

So, we still have a capacity shortfall in our State, particularly for hard to deal with wastes, as Mr. Porter mentioned, dioxins and others that need special kinds of treatment through incineration or otherwise, but we have not noted major dislocations and we don't expect that there will be any particular effect from the rules that will go into effect this summer. As Mr. Librizzi said, I think we would like to see those rules tightened and cover many more wastes than they do now.

Senator **Baucus**. Thank you.

Mr. Librizzi.

Mr. **Librizzi**. A personal observation—I have come to New Jersey from EPA, by the way.

Senator BAUCUS. Well, you ought to know, then.

Mr. LIBRIZZI. And my personal observation in working at the Federal and State level is basically this, and it is personal. When you are at the State level or even at the local level, for that matter, you are essentially in the trenches at the front line. So, what happens in that regard is you see the problem rather vividly, and you see it in front of you rather than coming over the hill.

So, being able to do that, being able to see that problem and defining it rather quickly and being pressed to deal with it certainly gives us at a State level the impetus to deal with the issue rather quickly and decisively, because it is very important to the States to do that.

EPA, in supporting the State programs, ought to listen to the States and listen to the problems that they have, and I believe they are attempting to do that, and develop their programs to carry out the intent of Congress and to make it easier for the States to carry out their programs.

Senator BAUCUS. Mr. Child, very quickly?

Mr. CHILD. I would agree with the last two speakers' comments. Industry has not streamed out of Illinois. As a matter of fact, industry, while they thought that the requirements we were going to place on them were going to be quite a burden, as it turned out, they were able to reduce the amount of waste that they had. They were able to get lower disposal costs because now much of the waste that they have is non-hazardous. They treat it in the plant and send it out as a non-hazardous waste at a lower disposal cost.

So, I think, in retrospect, they have been back in saying gee, that land ban wasn't all that bad a thing. Not every industry has said that, of course. There have been a few that it has created a hardship on, but, once again, we are working with them to solve their problems.

I would agree with this front line approach. The reason we implemented the land ban in Illinois was that the public demanded it. It was clear that the public wanted this, that the legislature wanted it, and we moved expeditiously ahead and put the land ban in place in Illinois.

Senator BAUCUS. Thank you.

Senator Lautenberg.

Senator LAUTENBERG. Thank you very much, Mr. Chairman.

Briefly, I welcome all the witnesses.

The States, I think have to move on these things because it is in their back yard, and you have to just get going. Sometimes, Washington is a long distance not only from our particular States but from reality as well.

Bill, is EPA doing enough to help the States to assure adequate capacity to handle hazardous wastes over the 20-year period that is required by SARA?

Mr. LIBRIZZI. I think we have some concerns relative to that. From the State of New Jersey's perspective, as I suggested in the earlier comments, our hazardous waste siting commission has and continues to take a hard look at the capacity issue for the State of New Jersey. For the period 1988, we have put into motion the necessary activities to get us that capacity that would support the State of New Jersey's needs with some limited importation.

With the SARA provisions, when you think about it from a national perspective, it is unclear as to the impact SARA provisions in terms of capacity are going to have, because the development of capacity—and I am assuming, based upon EPA studies, that the existing capacity may not be adequate across the country to begin with, but when you look at existing capacity and you begin to estimate—and the process of estimation, from the national perspective, there needs to be some sense as to how that should be done and what role the Federal Government and EPA and the States ought to be playing in regard to that capacity estimation.

There will be an awful lot of pressure on States to provide a program to take care of the hazardous waste disposal required by SARA.

Senator **Lautenberg**. If we look ahead 20 years, do any of you see evidence that there is enough action by EPA to provide the capacity to handle the requirements or are we going to just be able to do with waste minimization what we would like to do and reduce significantly the need or the capacity to handle this stuff? What do you think?

Mr. **Marsh**. I think that is a real open question. I think that if we were just looking at the hazardous waste stream created by industry, the direction we see things going is very encouraging. There is waste minimization going on, source reduction.

We believe the technologies are either here or not far off to greatly accelerate the waste minimization process as far as industry processes are concerned.

What worries us, I think, a great deal more is the unknown factor of the cleanups and how much additional capacity will be needed for off-site dealing with the Superfund cleanups, what kind of levels of remaining contamination will be acceptable and, therefore, whether we will need to treat significant portions of the cleanup stream, because the quantities involved there are absolutely tremendous.

I think that the direction Mr. Porter mentioned of trying to license on-site cleanup technologies, to the extent that that is going to be achievable, I think it is a good direction and will help ameliorate the long-term capacity problem.

Senator **Lautenberg**. Well, if you will forgive me, maybe I am looking for too simple an answer. The thing that I know is that material is being created. I hear optimistic reports that quantities, if I heard you correctly, are being reduced on a relative basis.

Still and all, 20 years passes very quickly; is EPA doing enough to help us if we can't treat these wastes properly or find places to put it? The battle that is now going on, the finger-pointing from State to State, the cry of we don't want it, we don't want it—what do we do with it?

New Jersey has had a ban on landfill for some time, but I am not satisfied, and I don't know whether you are, Bill. The technology is there to permit us to breathe easy in the knowledge that we are not going to need some kind of a landfill. None of us wants it; what do you think?

Mr. **Librizzi**. Well, I think one thing in terms of the Superfund program, I would certainly be looking for EPA to be aggressive in applying innovative technologies that are required by the legislation. Even if it requires a little bit of risk, that needs to be taken relative to the application of innovative, unproven technologies.

I think I would look to see EPA doing that, because in terms of Lang Marsh's comment about the unknowns associated with cleanup of hazardous waste at Superfund sites, the applying of the technology is certainly going to kind of deaden the capacity issue.

Senator LAUTENBERG. We need their hand, really. We need their encouragement, we need their pressure to help the States. The States do not have the capacity, typically.

Is the Agency using permitting procedures to get the treatment capacity on line in a timely fashion? What do you sense about those things? Mr. Child?

Mr. CHILD. I honestly don't believe that they are moving as expeditiously as they could on alternative technologies. They have started out by permitting landfills first followed closely behind by incinerators. The incinerators was a good move.

I question as to whether, though, they should have done necessarily the landfills first. I think maybe it would have been wiser to start looking at these alternative technologies, biological treatment, chemical treatment processes, things that we need to do away with landfills.

It seems to me that the order is slightly skewed here the wrong direction.

Senator LAUTENBERG. Well, we will be looking into that, and I thank you very much, Mr. Chairman.

Thank you, members of the panel.

Senator BAUCUS. Thank you, Senator.

Senator Graham.

Senator GRAHAM. Mr. Chairman, one truth that I believe the panel has underscored and the barge that we have referred to illustrates the necessity of having a comprehensive strategy which includes enforcement standards and the development of alternatives so that you don't end up with a system which has squeezed down on your traditional means of disposal to the point that you blip out a barge. We could visualize the oceans filled with barges carrying waste that we have not figured out how to dispose of but have condemned to the traditional means.

How do you see the current strategy with particular emphasis on the State-Federal relationship to arrive at a coherent and coordinated program of phasing out what we now consider to be unacceptable or less acceptable disposal means at the time that we phase in alternatives?

Mr. LIBRIZZI. I have thought about that, and the one question that occurs to me which I don't have an answer for—we talked about waste minimization. As we are phasing out land disposal and moving towards coming up with other alternatives, is in fact the waste minimization at the Federal level targeted to assist in the phase-out effort?

For example, from the Federal perspective, how is that program developing? Is it developing in concert with the land ban provisions to provide alternatives where they can be appropriately applied in the industry?

So, that is a question I have in response to your inquiry.

Mr. **Marsh**. I would add that I don't think there is an integrated, comprehensive plan or strategy on the national level. I think some of the States are trying to do it on their own, but what we discovered very quickly in our own individual planning processes is that this is not a State-wide problem. It is certainly a regional problem with many States involved and probably virtually a national problem in that the market, transportation, destination of hazardous wastes from, for example, the Northeast is virtually the entire eastern half of the country and perhaps some of the western States, too.

So, I think that there needs to be a very comprehensive look at trying to integrate all of the different strains of the problem, including the waste minimization as the top priority and the identification of alternative technologies for treatment.

I am very encouraged by the site program under the Superfund law which is going to help develop some technologies for waste destruction. We would like to see that move as quickly as possible.

Then, some assistance from the Federal Government is needed in scoping out the national aspects of this program, the waste bans, how do you develop dioxin treatment capacity in the face of reluctance of the private sector to move forward. These are issues that States can wrestle with and try to do something about, but we need Federal assistance in helping us think that through.

Mr. **Child**. I would add I have seen in the last three or four years an increased effort on U.S. EPA's part to integrate with the States, talk to the States, and in the RCRA program and the CERCLA program. I have not seen the same effort on the subtitle D or solid waste program.

I think there is a major failing on the part of U.S. EPA to come to grips with how we are going to fund that massive problem that is out there. It dwarfs in terms of quantity the hazardous waste problem that we are dealing with under RCRA.

It seems to me that U.S. EPA's idea is to give us some minimal standards and to dump that on the heads of the State and say you deal with it and we are not going to try to help you obtain funding to deal this massive problem, we are just going to give you these standards.

We are trying to work with U.S. EPA on trying to figure out a way to obtain funding.

Senator **Graham**. I would like to ask, since my time is expiring, if you might be willing to supplement what you have said today to the extent that you feel appropriate with what you believe should be the characteristics of the Federal-State relationship in developing a strategic approach with particular identification of any current obstacles that are federally imposed or incentives that might be federally initiated that might be of assistance to the States.

In asking that, I wouldn't limit your thinking to those responsibilities which come directly under EPA. For example, there was concern in our State last year at some of the implications of the tax reform bill and its limitation on the financing of appropriate facilities as to what it would do, I am certain, unintendedly, to make it more difficult for States to meet their disposal obligations.

Mr. **Librizzi**. We would be glad to do that. (See p. 207.)

Mr. **Marsh**. Be glad to do that.

Senator **Baucus**. Thank you, Senator.

Very quickly, what are you doing for small businesses who have to incur greater costs to meet your more stringent standards?

Mr. **Child**. Within Illinois, we do have an active program, the small quantity generator program, where we go out and actually put on active seminars throughout the State and try to show people how to deal with the paperwork, pointing towards some of the financing mechanisms to helps them with their problems, give them advice on treatment and disposal alternatives, and that is an on-going program.

We have several of those, six or seven of those seminars a year, and they are very well attended and free to small business.

Senator **Baucus**. But it is working out, you think, reasonably well? Does what you are doing address some of the specific, separate, and individual concerns of small business?

Mr. **Marsh**. I think the seminars are helpful, and EPA has been good in providing money for them, but I think that the next step is to provide technology transfer for these smaller businesses so that they can profit by the efforts that the larger companies have undertaken to minimize their waste streams and treat them better and so forth.

We are working with the university sector in our State to try to come up with a better technology transfer program for small quantity generators.

Senator **Baucus**. Thank you, gentlemen, very much. We appreciate it.

Senator Graham [presiding]. Would the third panel please come forward. Senator Baucus has to go to the floor to manage a resolution that he is sponsoring, and Senator Stafford wishes me to state for the record that he had been in attendance and also has to leave.

I am pleased that we have a panel which will provide us a perspective from a variety of backgrounds on this issue. First, we have Mr. Blake Early, Washington representative of the Sierra Club.

Mr. Early.

STATEMENT OF BLAKEMAN EARLY, WASHINGTON REPRESENTATIVE, SIERRA CLUB

Mr. **Early**. Good morning.

Thank you for inviting me to this hearing.

My name is A. Blakeman Early, and I am the Washington representative of the Sierra Club.

I think it is very important to put consideration of EPA's implementation of the landfill restrictions in perspective. It has been generally accepted for about a decade that burying toxic wastes in the ground is a thoroughly bad idea. Most experts agree that building the perfect bathtub to hold hazardous industrial wastes without leaking has never been successfully accomplished.

Through the implementation of Superfund, we are learning that yesterday's burial sites are today's Superfund sites, and, unfortunately, today's burial sites are likely to be tomorrow's Superfund sites. Hence, the Superfund has grown from $1.6 billion to $8.5 billion.

Congress in 1984 very clearly laid out a policy shift that was designed to discourage land disposal in favor of source reduction, recycling, and incineration. Wastes that were to be land disposed were to be treated in order to immobilize or detoxify them.

The land disposal restrictions are the linchpin of this new policy. There is little doubt that the provision requiring EPA to determine which wastes are not suitable for land disposal was intended to drive waste generators to seek more health protective alternatives, recognizing that they would not do so voluntarily because of the increased cost and the inconvenience of abandoning the status quo.

Looked at in the context that I have just described, EPA's proposal of December 11 is a violation of both the spirit and the letter of the law. I believe that it represents the apex of bureaucratic razzle-dazzle which has expended valuable EPA resources while completely flouting the will and intent of Congress.

The fact is that this proposal can best be described as the land disposal unrestrictions, and the result will be an unfortunate deferral of the time when untreated hazardous wastes are no longer land disposed.

While the EPA purports to be adopting the statutory levels as maximum allowable concentrations of the listed toxics in the waste to be land disposed, its method of identifying such wastes through measuring the leachates of these wastes as they emerge at the bottom of the site has the practical effect of raising the allowable concentrations of the hazardous constituents in the waste that can go into a site by orders of magnitude.

The statute clearly intends the restriction to apply to hazardous constituents in the waste stream prior to leaching, dilution, and attenuation. According to the analyses submitted by the Hazardous Waste Treatment Council, California list wastes would have to contain more than 240,000 parts per million or 24 percent leachable chromium, 180,000 parts per million leachable lead, and 20,000 to 50,000 parts per million total cyanide in order to fail the TCLP and be ineligible for land disposal under the proposed rule.

This is clearly not what the law requires. The 1984 amendments restrict the amount of chromium and lead to 500 mg/l and cyanides at 1000 mg/l.

The impact of the proposed land disposal restriction for most of the California list wastes would be so negligible that it is not clear that any wastes are being generated and land disposed that contain such high concentrations of these toxics.

But, of course just in case there are such cyanide wastes, EPA has provided a two-year across the board waiver from the application of the restrictions.

Subsection 3004(h)(2) provides that the variance is supposed to extend to a date which is "the earlier date on which adequate alternative treatment recovery or disposal capacity will be available." It is clear that EPA has ignored this directive by failing to carefully consider the availability of treatment capacity for California list metals, cyanides, and halogenated organic wastes.

The tragedy is that the longer the Agency defers identifying acceptable treatment technologies, the longer industry will defer making the necessary investment in such technologies so that adequate treatment capacity will be available.

Finally, the EPA has proposed a variance which ignores the mandate that all wastes for which variances are granted be disposed of only in land disposal facilities that meet the minimum technology requirements, that is, the use of double liners, a leachate collection system, and groundwater monitoring system.

Clearly, Congress intended that if variances had to be granted, they should only allow continued disposal of California list wastes in the most protective land disposal units. EPA has totally ignored this directive.

The irony is, EPA's excuse for not lowering the statutorily set concentration levels to which the land disposal restrictions would apply to the EP toxicity levels—and that is 100 times drinking water standards—is that the disposal of these wastes in hazardous waste land disposal units provides a greater level of protection than that provided by a municipal landfill. If the hazardous waste land disposal unit is not required to meet minimum technology requirements, this assumption is totally erroneous.

EPA is also ignoring Congress' intent. The Congress has clearly laid the basic ground rules for allowing continued land disposal of hazardous wastes. As stated in subsection 3004(d)(1), "a method of land disposal may not be determined to be protective of human health and the environment unless it has been demonstrated that there will be no migration of hazardous constituents from the disposal unit for as long as the wastes remain hazardous."

The testimony of both the NRDC and the Hazardous Waste Treatment Council outline effectively the Congressional intent that the statutory concentrations operate as a starting point, and EPA should lower them where possible. As the testimony from NRDC clearly shows, the leachate from California list metals when tested exceeds the drinking water standard by 1700 times at the point of exposure—and that is at the point of a first drinking water well—using EPA's own modeling.

The Sierra Club believes that concentrations of toxic metals even at drinking water levels in the leachate escaping the unit would not meet the requirements of the statute. It goes without saying that EPA has an absolute obligation to lower the concentrations of California list metals allowed to be land disposed if the leachate concentrations are 1700 times drinking water standards.

Senator **Graham**. Mr. Early, could you summarize the balance of your statement?

Mr. **Early**. Finally, Mr. Chairman, I think that Agency has clearly ignored Congress' intent in a most recent expression of a March 4, 1986 letter to Lee Thomas which indicated that it was the intent of the statute that the land disposal prohibition to require treatment prior to land disposal unless it is proven that untreated hazardous wastes or constituents will not migrate from the disposal unit. This no migration standard is essentially being ignored by the Agency.

I will conclude by saying that RCRA extends a promise to the American people that hazardous wastes will no longer be generated in a manner that threatens public health. I commend the committee for reviewing the latest proposal, but I believe that the committee will have to continue to conduct close oversight of the Agency's implementation of RCRA if the promise of RCRA is actually to be delivered.

Thank you.

Senator GRAHAM. Thank you, Mr. Early.

Mr. David Cannon, Assistant Counsel, PPG Industries.

STATEMENT OF DAVID CANNON, JR., ASSISTANT COUNSEL, PPG INDUSTRIES, INC., PITTSBURGH, PA, ON BEHALF OF THE CHEMICAL MANUFACTURERS ASSOCIATION

Mr. CANNON. Thank you, Senator.

I am speaking on behalf of the Chemical Manufacturers Association and would like to thank the subcommittee for the opportunity to testify.

As was made clear during EPA's testimony earlier, it is very difficult to quantify in any certain terms the effect of the California list proposal at this early stage. However, there is no question that the 1984 amendments resulting in land restrictions under RCRA are having a major impact on the chemical industry's waste management programs.

Examples within the chemical industry are programs to minimize the generation of waste, the greater use of recycling of waste than had previously occurred, increased treatment as opposed to land filling of hazardous wastes, the construction and planning of new incinerators which provide an alternative for numerous wastes which were listed under the solvent and dioxin rule as well as the California list rule, the replacement of existing surface impoundments with tanks, and additional research programs into alternative treatment methods.

Senator Baucus had been looking for some specific examples this morning. In my company, PPG Industries, for example, on new incinerators, we are constructing at least two major incinerators which, although they were in the planning stages before the 1984 amendments, will deal almost entirely with California list and solvent/dioxin list wastes and wastes which will be restricted in the coming years.

In addition, examples of phasing out surface impoundments are occurring at our West Virginia and Louisiana plants where existing surface impoundments for the treatment of hazardous waste waters are being either phased out between now and July 8 or between now and the November 1988 retrofit deadline under the statute.

In fact, the chemical industry began to change its waste management practices some years before the 1984 amendments. The Chemical Manufacturers Association conducts an annual survey and has since 1981 of the chemical industry waste disposal management, and it shows a continuing 5-year decrease in hazardous waste land filled. From 1981 to 1985, the decrease was 58 percent.

The total amount of hazardous waste generated also decreased during that period.

The land disposal restrictions do raise three important policy and interpretation issues which we want to focus on. The first is the concept of best demonstrated available technology.

The most fundamental principle under RCRA is that EPA has the authority and discretion to determine what is and is not hazardous. However, the land disposal restriction program requires treatment of a waste prior to land disposal to constituent concentration levels that are technology driven, that is, to the lowest level that the best demonstrated available technology will achieve.

These levels may often be orders of magnitude lower than a concentration level that would have been deemed hazardous in the first place. For example, as explained in more detail in our written testimony, EPA's final solvents and dioxins rule would require treatment of waste containing methylethylketone to a level 320 times lower than the concentration the Agency uses to delist wastes containing that constituent.

In fact, the land disposal rules generally require treatment to much lower levels than levels which EPA has in other RCRA decision making determined to be protective of human health and the environment.

Now, CMA member companies do in fact use available and practicable technologies to treat below concentrations that are protective of human health and the environment. That is not uncommon, for example, incineration of solvents.

However, BDAT should not require use of a single technology which produces the lowest concentration level when there are other technologies which will also achieve levels that are protective.

Our second major problem under RCRA is the over-regulation of waste waters containing low levels of hazardous constituents. The CMA survey showed that over 89 percent of this waste water in the chemical industry is currently managed in impoundments that comply with the pre-treatment and permitting requirements of the Clean Water Act, but the land disposal restrictions would not allow these dilute waste waters to continue to be treated in land disposal units.

They would have to be replaced by numerous massive tanks.

It is our opinion that a new approach for dilute waste waters must be devised to relieve the tremendous burden on industry to construct the replacement treatment capacity, that is, construction of huge tanks to replace the existing impoundments.

That capacity does not currently exist, and we believe that the regulatory requirements governing waste water must be made commensurate with its unique nature and minimal risks.

Finally, under the statute, our third major issue is when EPA determines that there is inadequate nationwide capacity for a waste stream, it may grant a nationwide variance from a restriction of up to two years. In doing this, EPA is only looking at existing BDAT capacity and not at the total treatment, storage, and disposal capacity available.

The Agency has said since it cannot establish BDAT for the California list wastes, it doesn't know when BDAT will be available and, therefore, cannot grant a variance or case by case extension.

It is our position that if BDAT cannot be determined by the Agency because the information or data does not exist, it logically follows, absent any other evidence, that it is not available, and an extension should be granted to give industry the opportunity to provide EPA with information or to come up with that technology.

In addition, EPA should consider the availability of all technology for dealing with these wastes rather than just the specific BDAT technology. We do not believe it is good environmental planning to eliminate technologies which protect human health and the environment but which cannot attain or achieve the absolute lowest constituent levels.

Thank you for the opportunity.

Senator GRAHAM. Thank you very much, Mr. Cannon.

Mr. Charles DiBona, President of the American Petroleum Institute.

Mr. RUCKER. Charles DiBona was unable to be here this morning. My name is Eldon Rucker. I will be substituting for Mr. DiBona.

Senator GRAHAM. All right.

STATEMENT OF ELDON RUCKER, MANAGER, WATER AND WASTE MANAGEMENT, HEALTH AND ENVIRONMENTAL AFFAIRS DEPARTMENT, AMERICAN PETROLEUM INSTITUTE

Mr. RUCKER. I am the manager for water and waste management activities for the American Petroleum Institute's Health and Environmental Affairs Department.

API welcomes the opportunity, Mr. Chairman, to address the subcommittee this morning in its oversight of EPA's land disposal restrictions program.

I would like to request that our written statement be made a part of the record and would like to just summarize it.

Senator GRAHAM. It shall be.

Mr. RUCKER. To begin with, API does not believe that EPA should be forced to reduce the statutory California list levels to some arbitrarily low level. This could exacerbate the disposal capacity problems in certain areas of the country and lead to immediate prohibition or some restriction of certain petroleum industry operations, specifically, land treatment.

In the statement which we provided for the record, we have made comments on the overall disposal ban framework, the use of the so-called TCLP, and certain aspects of the California list. At this point, I would like to focus particularly on the petroleum industry's major concern, and that is the future of land treatment.

The process of land treatment has been used in the petroleum industry for management of various wastes for more than two decades. Over 100 land treatment facilities specifically handling refining wastes are currently operating in the U.S., and the technology is also widely practiced in Canada and Europe.

The experience has shown that this technique can effectively manage the oil, the metals, and other constituents in oily waste.

Basically, land treatment consists of the controlled distribution of waste onto the soil followed by cultivation with the appropriate farm type equipment. The organic constituents in the waste are biologically degraded by the microorganisms in the soil to end products of carbon dioxide and water. The inorganic constituents, primarily low levels of metals, are rendered immobile through adsorption onto the soil particles or chemical reactions that occur in the soil.

Thus, land treatment does meet the statutory requirements associated with treatment standards for wastes subject to land disposal bans in that it, first, substantially reduces the toxicity of the waste, and, second, it minimizes the migration of the remaining constituents.

Under the current EPA regulations, in the permit process, owners or operators of land treatment facilities must submit extensive data on the site and the waste applied, referred to as land treatment demonstrations. These submissions must show that hazardous constituents are not migrating to groundwater or surface water.

The numerous studies that have been conducted by petroleum companies as well as EPA over the years have demonstrated that when the facility is properly designed and operated, land treatment is an effective method for handling oily waste. We believe that waste treatment technologies which reduce volume and toxicity should be encouraged rather than discouraged.

API is particulary concerned that mandated land disposal prohibitions will significantly affect current industry land treatment operations. This is because of the inclusion of the land treatment technology in the statutory definition of land disposal.

The timing of any such prohibition becomes especially critical if the California list constituent levels are significantly lowered.

One additional aspect of land treatment that should be recognized is its effectiveness for treatment of contaminated soils. In a number of cases, the use of on-site bio-remediation, another term for land treatment, as an optimum method for cleanup of Superfund sites has been strongly suggested. I think, as Mr. Lautenberg and the gentleman from Illinois mentioned earlier, the whole area of research into biological treatment is something that we would strongly encourage.

In conclusion, as Congress oversees future regulation under RCRA, we hope that the unique aspects of land treatment will be appropriately recognized so that those environmentally sound facilities can continue in operation. We believe that the statute's flexibility allows EPA to make a determination that land treatment can be considered as BDAT, or best demonstrated available technology, in the case of many petroleum wastes.

Thank you, Mr. Chairman.

Senator **Graham**. Thank you very much, sir.

Ms. Jane Bloom, senior staff attorney for the Natural Resources Defense Council.

STATEMENT OF JANE BLOOM, SENIOR STAFF ATTORNEY, NATURAL RESOURCES DEFENSE COUNCIL

Ms. **Bloom**. Thank you, Mr. Chairman.

The Natural Resources Defense Council appreciates the opportunity to testify before you. We represent 68,000 members nationally.

We worked for reauthorization of RCRA with you in 1984, and we have closely monitored EPA's implementation of the land ban provisions since that time.

We are very deeply concerned by what we see as a multi-pronged rulemaking effort on EPA's part which, in our view, subverts the land ban. At best, we could say that it undermines the ban; at worst, it could be characterized as having eliminated it entirely for the next couple of years.

The first rule, EPA's final rule from November of last year for solvents and dioxin containing waste basically imposes a two-year moratorium on the land ban by extending it on the basis of the national capacity variance for virtually all of the solvent wastes covered under 3004 and for the dioxin containing wastes as well.

As EPA mentioned earlier, this variance is based on outdated information on capacity, and the Agency simply didn't have enough information to make a rational capacity determination in our view.

In addition, we are particularly concerned by something mentioned previously which is that the rule basically eliminates the double liner and leachate collection system requirements for landfill and surface impoundment units that would be receiving banned wastes during the extension period. We have challenged EPA's rule and challenged that specifically in a suit that is now pending before the U.S Court of Appeals for the District of Columbia Circuit.

However, we don't really expect a ruling on this question before the extension ends which leads us to believe that it would be tremendously helpful to have the framers of the law send a clear message to EPA that they meant that units that are going to be receiving banned wastes during any extension period must have met the minimum technology requirements.

In addition, we have concerns about EPA's implementation of the no migration exemption. We don't believe that the door has been closed to an approach that was tried in the January 14 original proposal which was instead of a "no migration" approach, a "no unacceptable" migration approach. As was pointed out earlier, EPA was admonished that this was not the appropriate implementation of this provision.

However, we believe that the rule that EPA finalized last November doesn't close the door to that interpretation coming up on a case by case basis and that that in fact is how the no migration standard will be determined. No definition is really provided in the November 7 rule.

Therefore, it will be done on an ad hoc basis and largely shielded from public review because the procedure that EPA has outlined only gives public notice of recipt of a petition for a no migration exemption at the time when EPA has made a tentative decision to either grant it or deny it, at which point the public then has only 30 days in which to review probably highly technical information and make comments before the Agency finalizes its decision.

With respect to the California list proposal, once again, there are extensions provided under the national capacity variance provision for many wastes, and EPA has also limited the universe of wastes which will be subject to the ban by proposing to establish the statutory concentration levels for hazardous constituents, which are extremely high, in our view.

We looked at EPA's data and used EPA's own methodology to evaluate what might happen if these wastes at those concentration levels were land disposed and, as was pointed out earlier, determined that with respect to metals, concentrations might appear at a drinking water source at 1700 times the drinking water standard. This seemed to us patently not protective of human health and the environment. Cyanides, for instance, could appear in groundwater at 15 times the lethal dose for a child.

So, we are terribly concerned by those levels, and we proposed alternatives which I have reproduced for you in our written testimony.

I think the bottom line is that we think EPA has not gotten the message that Congress intended it to get in 1984, which is that land disposal of untreated hazardous wastes is really to be the last resort and we are to move to the top of the waste management hierarchy through the land ban, to source reduction, recycling, and proper treatment of wastes.

I should say in this regard that we do not believe that the land ban alone, particularly as it has been implemented to date by EPA, is going to be sufficient to move us towards significant source reduction and recycling. We believe that more will be needed in terms of a Federal initiative on waste minimization, that will really induce the generators of hazardous waste to reduce substantially the rather large quantities of hazardous waste that we now have to manage.

It has been estimated that between .25 billion and 1 billion tons of hazardous waste are being generated annually, and although we may be seeing slight drops in these numbers in various States, I think the jury is still out on whether we are really beginning to substantially reduce.

We look forward to working with you in the coming reauthorization of RCRA, particularly on source reduction to develop a strong program that will complement and strengthen the land disposal ban and move us forward towards the objectives of RCRA.

Thank you.

Senator GRAHAM. Thank you, Ms. Bloom.

Senator Durenberger, do you have any questions?

Senator DURENBERGER. No, thank you, Mr. Chairman.

Senator GRAHAM. I asked the earlier panel a question if the feeling was that there was a strategic plan which was adequate to balance the enforcement and the development of alternative treatment or disposal methods and which dealt with the intergovernmental issues as between the Federal Government and particularly States and local communities.

From your analysis of the program, do you sense that there is such a strategic plan and, if so, what is its adequacy?

Mr. EARLY. Senator, I don't believe that there is an adequate plan. I agree a lot with the comments of the representatives of the State agencies that the Agency is clearly making some effort, although I believe a watered down effort, to meet some of the deadlines that restrict disposal of wastes.

You may have seen an OTA report that was issued about a year ago, a year ago June, which indicated that waste reduction is a very low priority at EPA, that they have very few people actually working on it, and the report in fact recommended that Congress create an assistant administrator for waste reduction.

So, you don't have the kind of investment in helping to reduce the volume and nature of the problem. That kind of commitment isn't there.

And, as we have already pointed out, the commitment to adequately containing and restricting the management of the wastes that are hazardous is not what it should be either.

Senator GRAHAM. Any other comment on that question?

Mr. CANNON. Yes. I think that when we talk about the pressure on industry through the Agency to reduce the generation of waste, the results of the Chemical Manufacturers Association survey, as I said, show a 58 percent reduction of waste land filled over the last 5 years and a significant reduction—I don't have the percentage—in the waste generated.

There are very detailed on-going programs, both at the trade association level and at the individual company level, to minimize the amount of waste generated. This is being driven by numerous factors by increasing Superfund liability, corrective action problems under RCRA, by what we anticipate to be EPA's land disposal decisions, and it is being driven primarily by Congress' actions in the 1984 amendments.

I think that within the chemical industry the primary driving force is those factors, and it has started—there is a major initiative going on. I think there is significant progress within the industry itself.

To the extent that that is occurring and the data is just now coming in, I think that it is an adequate program to result in the kind of minimization that Congress envisioned in the 1984 amendments.

We have submitted copies of our hazardous waste survey to subcommittee staff members, and we have additional copies if they are wanted.

Mr. EARLY. Senator, I would just like to interject one thing. One of the real tragedies in this area is that the data availability is a joke. EPA is relying on 1981 data with respect to generation and management numbers.

We have no basis to judge whether the gentleman's comments about the great progress that is being made in the industry is in fact accurate or not because the data is so inadequate. He represents, of course, only one sector of the industries that are affected, and the fact that EPA is going to take another 12 to 18 months to generate data is really a tragedy because we can't tell whether we are really making progress on waste reduction or not.

Senator GRAHAM. Do you feel, Mr. Cannon, that you have adequate statistical support for the statements that you have made?

Mr. CANNON. Yes, I feel that we do for the chemical industry and the number of plants which responded as part of our survey.

Senator GRAHAM. And of the totality of the problem, what percentage is represented (a) by the chemical industry and (b) by those who responded to the survey?

Mr. CANNON. I believe the survey covered a majority of the major—most of the major chemical producers and a majority of the chemical producing capacity. I have no—we could get back to the subcommittee—idea of how that could be extrapolated. We have considered that in the past and run into problems extrapolating that just for the chemical industry.

So, there are some conclusions on that, but it really is limited to trend analysis on a core group of companies that have responded to the survey every year since 1981.

Ms. Bloom. Nonetheless, I should point out, based on CMA's survey, the Congressional Research Service estimated that if you extrapolated from the 247 million tons that CMA said its members generate, perhaps 1 billion tons of waste could be considered to be generated by industry in general of hazardous waste. Those were figures that were provided.

I would like to stress that the kind of reporting requirements that we now have under RCRA to specifically document hazardous waste reduction are minimal at best. There is virtually no specificity in what is required to document source reduction except a brief narrative description in the biannual report and a certification on the manifest for wastes that are shipped off-site and as part of the permit process.

So there really isn't a data base that even now is being developed on the Federal level for all hazardous waste generating industries, and that is one of the recommendations that we will be making to improve the system.

Mr. Cannon. If I could make one quick comment, in the extrapolation of the data, I believe our last survey showed approximately 213 million tons, but about 98 percent of the waste in the CMA survey is waste water. So, in terms of the extrapolating data and the quantity of waste generated and potentially landfilled, we are talking about a vast majority of the waste being waste water which requires a different analysis.

Senator Graham. I would assume, Mr. Cannon and Mr. Rucker, that the firms that you represent do business in most, if not all, of the States in the country. What is your assessment of the relative level of standard setting and enforcement among the States as distinct from the EPA Federal standards? How many States today have more stringent programs than the Federal standards would require?

Mr. Rucker. I don't know if I have a specific answer, Mr. Chairman, on how many. As you point out, we have members that operate in all States. I know that the State of California has a number of requirements that are more strict than the Federal requirements. There are other States that are similarly inclined.

As far as enforcement is concerned, I think there are varying levels of enforcement within the States as well, but I am not aware that our members are having specific problems in any of those States.

Senator Graham. That was the question to follow up on some comments made by the State panel. Has there been a pattern of economic dislocation or disincentive to new location in those States which have set higher than Federal standards or enforcement practices?

Mr. Rucker. The only example I heard mentioned this morning was related to some of the hazardous wastes from the State of California, going to the State of Nevada. To the extent there are situations whereby either the legislation or the regulation makes it difficult to site a facility, there could be cases where the material is going to neighboring States.

I don't think that is a widespread problem, but, obviously, it does occur.

Mr. CANNON. I would second that. As we stated, there is a lot of variation between States, enforcement programs, administration—it is all over the board, and there are some States significantly stricter. Although there are often serious administrative and economic problems in dealing with waste and practical problems, we are not aware right now of any severe dislocations or compliance problems that have occurred.

I think few States have substantially more stringent regulations than the Federal system. I think to a great extent they are often coming together because of the complexity of the Federal system and the need for States to have their programs similar to the Federal system.

Mr. EARLY. Senator, I would just make a note that one thing that is important in an evaluation of that type is to make the distinction between what more stringent requirements States may have on the books versus what more stringent requirements are actually enforced in terms of the day to day management activities of the industries in their State.

So, it is sometimes very difficult to make an evaluation. It is pretty easy, obviously, to compare State regulations to Federal regulations and see if they are more stringent, but the regulations may be very hollow in many cases. They are not properly enforced.

Senator GRAHAM. One last question. Mr. Rucker stated that in his judgment, there was no evidence to support lowering the California list levels. Do you or Ms. Bloom have any comments on that?

Ms. BLOOM. Well, as I said, we analyzed those levels in terms of EPA's predictive modeling which I have to say we have questioned in the past. But, nonetheless, we used their own fate and transport models to determine what might happen if those wastes were land disposed and ended up in groundwater sources of drinking water and determined that those levels, as I say, vastly exceeded the drinking water standards that have been set to protect our health for those particular constituents and found that they were very, very high, and much too high, far exceeded those standards.

So, our view is that there is evidence to—there is far more compelling evidence to support a finding that the California list statutory levels are not protective of human health and the environment and that the Agency needs to drastically lower them in order to argue that they have set health protective levels.

Mr. EARLY. I heartily agree. It is important to recognize that the California list levels were chosen because California was ahead of the Congress in terms of its analysis of what would be an appropriate level, and the California list level was chosen by Congress in large part because there wasn't any other list out there.

But Congress very clearly indicated that EPA should look at that and consider lowering those concentration levels in order to eliminate any threat from the land disposal of untreated wastes.

EPA is not doing that. I think the analysis that Ms. Bloom just indicated shows that they are simply not looking at it from that standpoint. In our view, that is illegal.

Ms. BLOOM. The Agency has also, I think, taken the position that it must have extraordinary evidence in order to lower those levels. That is apparently its legal interpretation, that it needs evidence that there is a substantial threat if they do not lower those levels.

We see it rather differently. We think that Congress intended them to identify health protective levels and not be bound by the levels in the statute, that those were meant to be a starting point or a point of departure for their analysis of what is a health protective level.

Senator GRAHAM. Any concluding comments?

Mr. RUCKER. I would just like to make a couple points. I think from our reading of the legislative history associated with the California list, it was apparent that there was the same kind of dialogue that we are having here that went into the development of those levels. I guess in response to Ms. Bloom's calculations, I think they are accurate in terms of a situation where there are no liners involved, but if these wastes are hazardous, they would have to meet the minimum technology requirements which would provide a liner.

Ms. BLOOM. Certainly not for the first two years.

Mr. CANNON. Just one closing point that the facilities generally that involve these wastes—surface impoundments of primary concern—often do not meet the minimum technology requirements now but are obliged to do so by November of 1988 under the statute. In addition, they are subject to the full range of subtitle C regulations which is groundwater monitoring, closure, post-closure requirements, and additional inspection and investigation requirements under the statute and the regulations.

Senator GRAHAM. Thank you.

We will take a five minute recess and reconvene thereafter.

[Recess taken.]

Senator GRAHAM. Panel 4; Mr. Richard Fortuna. Mr. Fortuna is Executive Director of the Hazardous Waste Treatment Council.

STATEMENT OF RICHARD FORTUNA, EXECUTIVE DIRECTOR, HAZARDOUS WASTE TREATMENT COUNCIL, WASHINGTON, DC

Mr. FORTUNA. Thank you, Senator Graham.

My name is Richard Fortuna. I am Executive Director of the Hazardous Waste Treatment Council, and we appreciate the opportunity to testify here before you this morning, and we commend the committee's vigilance for revisiting this most important issue, particularly as it pertains to the California list restrictions.

We are going to be summarizing our statements, and we ask that they be submitted for the record.

The Treatment Council is the largest association of commercial hazardous waste treatment firms and equipment manufacturers dedicated to the proper treatment of hazardous waste and the permanent remedy of abandoned sites.

I am accompanied this morning by two of my member firms: to my right, Mr. Bill Ziegler with Cyanokem who is going to be addressing the issue of cyanide waste this morning, and on my left, Mr. Peter Bibko of Chemfix Technologies who is going to be talking about some of the deficiencies related to the metal bearing wastes on the California list restrictions.

I would like to spend just a couple minutes on providing a little bit of perspective on how the California list came about. It was not derived from the Beach Boys, as some people would have ascertained.

Rather, back in 1982 when many of the original bills to reauthorize RCRA and begin ratcheting down on the RCRA system began to be introduced, one of the most popular approaches was to say we are going to have no more land disposal, say, in five years. In fact, then-Congressman Breaux, a member of this panel, introduced such a bill, as did many other Members.

What people came to recognize rather quickly was that getting from here to there needed a few steps along the way as opposed to just waiting for the end for everything to happen. And those steps some people have discussed this morning already. One was the solvent/dioxin ban from last year to deal with some of the most significant waste streams. Dr. Porter also talked about the 1988, 1989, and 1990 prohibitions for the balance of the listed and characteristic wastes.

But one of the other very important components in this step-wise process to get from here to there was the California list restrictions that really sort of took a very shallow but wide cut across a wide range of metal bearing organic wastes, cyanide bearing wastes to begin us phasing in, or, as the conference report stated, making that a starting point for the balance of the restrictions of the land disposal program.

We are here to tell you this morning, Senator, that rather than serving as a starting point, this California list restriction is really much more of a false start. As the saying goes, watch out for that first step. Well, this has been very much of an elevator shaft for those people who have been wanting to implement and expand proper treatment capacity for hazardous waste.

I think speaking for all the members of the Treatment Council, our 60 member companies, the universe of waste subject to restrictions as proposed by EPA is basically a null set. I think that view is pretty much verified by the State panel this morning talking about the fact that they have gone well beyond these levels already.

There are no wastes currently generated in American industry or virtually no wastes that would be subject to these restrictions.

Now, the statute established a set of levels that were, as has been mentioned, roughly at 10,000 times drinking water standards as the starting point for these restrictions. But the statute also imposed a non-discretionary, mandatory responsibility on EPA to determine whether these levels are protective.

EPA did not do that. EPA has not made a determination as to whether these levels are protective. They have assumed that is all that needed to be done.

In addition, they promulgated a test to determine the levels of constituents that in many ways for the cyanide and the metal bearing wastes in particular serve as a dilution factor as much as anything else.

We believe that unless this proposal is changed, this will have basically no net effect on the wastes that are generated in American industry today, particularly as it pertains to the metal and cyanide bearing wastes. The other point to keep in mind is that unless we deal with some of the metal bearing wastes in the California restriction, many of them will not be affected until 1990.

In conclusion, I would just like to say, Senator, that there is no question that we have the capability to manage these wastes in a proper manner. There is no question we have a lot of existing capacity that is being underutilized.

We also have significant investments that have been made by companies here at the table and other companies in the Council on the expectation that these restrictions were going to be meaningful but that are not receiving a return.

I would indicate that we were encouraged by what Dr. Porter and Marcia Williams had to say this morning, but we don't see any reason why they can't do what they are proposing to do in a proposed rule in the actual July promulgation. We can easily change the cyanide test to more accurately reflect how wastes behave in a landfill, and we certainly have a pre-established series of levels for metal disposal into landfills that EPA has been using since 1980.

I guess I would just close by indicating I certainly take Dr. Porter and Marcia at their word. They are decent, honorable, and very capable people, and I think they fully intend to carry through on their commitment.

I would simply observe, though, that Marcia and Dr. Porter are not masters of their own destiny. We have an Office of Policy Analysis inside EPA that has—Mr. Dick Morgenstern heads that office who has as his 11th commandment thou shalt not approve any regulation unless it passes my cost/benefit analysis.

We have an Office of Management and Budget that, similarly, looks with disdain upon any regulation of this sort that expands the scope of coverage.

So, I would simply commend to the committee's attention the assurances that have been provided the committee this morning in July and August to ensure that indeed the promulgation is being followed up on and is not merely falling as thunder amongst the rocks of OMB and the Office of Policy Analysis at EPA.

Thank you very much.

Senator **Graham**. Thank you, sir.

Mr. Peter Bibko?

STATEMENT OF PETER BIBKO, VICE PRESIDENT AND GENERAL COUNSEL, CHEMFIX TECHNOLOGIES, INC., PITTSBURGH, PA

Mr. **Bibko**. Thank you, Richard. Good morning, Senator.

I am general counsel to Chemfix Technologies, Inc., a company that treats hazardous waste. That is our sole and our exclusive job.

We treat hazardous waste through chemical fixation, a process that is particularly applicable to metal pollutants such as the California metals. We do so in several States, including California on an on-going basis, Illinois, Massachusetts, New Jersey, as well as our headquarters State, Louisiana.

We are very pleased to have this opportunity to discuss EPA's proposed action with you, because, frankly, I don't know any other way to say it but to call it what it is. Although Win and Marcia are certainly decent and honorable people, as Richard has indicated, they don't always control their own destiny or the form that their proposed regulations take.

Frankly, whether they fully recognize it or not, the proposal as we interpret it will result in nothing but business as usual at all commercial landfills in the United States of America, and there will be no change forthcoming even after—I stress even after—they reevaluate the data they referred to this morning as being new that would lead them to rethink their earlier proposal for reasons that I will now summarize.

First of all, Senator, to put this thing into black and white perspective, because it is a very highly technical field, we saw Congress in the land ban provisions saying there are certain metals out there that can be controlled better than they are now being controlled before they go into a landfill. There are certain tests, certain protocol could be applied to them to minimize the leachability of them after they go into a landfill.

This is the California list.

We thought the charge to EPA was that if the concentrations, the total concentrations, in these wastes exceed 500 or 1000 mg/l, then EPA is to find out what kind of technologies can be applied to minimize the concentrations of these constituents in the leachate. After that is done, EPA was then charged to determine what level should be aimed at in applying the technology or what performance standard in leachate.

Let's look at what the EPA has done.

Instead of looking at the total concentration, they have decided that the threshold as to whether or not any treatment should be required will be determined, as stated earlier, by looking at the concentration in the leachate. Mr. Chairman, we at Chemfix have taken a look at all the waste we have ever analyzed over the past 7 to 10 years we have been in business, and not one single hazardous waste would fall subject to the landfill ban under this interpretation.

As a matter of fact, in order to fall subject to the ban, our evidence indicates that it would have to be a mine-able concentration of chromium, cadmium, et cetera; 2 to 5 to 10 percent and higher would have to be present. Clearly, that would be something that would be recyclable and would not be a waste to begin with.

Second, if by some miracle, frankly, one were to pass that test, the second test applied by the Agency is erroneous because they are saying that basically there is no data available to show that there is technology out there which can meet 100 times drinking water standard which, of course, is the standard the Agency has by regulation already established as one necessary to minimally protect public health. It is the hazardous/non-hazardous characteristic standard.

I have before me, Senator, a copy of confidential data which was submitted to the Agency in confidentiality that represents a sum total of some 300 or 400 different wastes that we have looked at over the past 7 years. In every single case, after our process was applied—and we are not even unique among our competitors—in every single case, for most metals, we reduced the concentration below the 100 times drinking water standard that EPA says it is doubtful can be met.

In 95 percent of all cases, we reduced it below this level. In many cases, we reduced it to 6 times drinking water standard which, of course, is the delisting level.

If by some miracle now a waste would still fall subject to the ban given the two problems I have just identified, you still have a problem with the proposal EPA has taken because they assume there is no capacity out there even if one could show they could meet the 100 times drinking water standard.

We are but one company, Senator. Our company operates mobile facilities and fixed facilities, as I indicated to you earlier. Right now, we have the capacity—it is our belief based on data which is contained in my testimony and can be scrutinized—to chemically fix all California list metals that would go to 28 to 30 of the largest subtitle C facilities in the country. We estimate there are 50 or so that would fall in this category. That represents 80 percent of the capacity of the country.

We could easily, within a 180-day period, provide the capacity, one company, to handle all hazardous waste facilities in the country.

Lastly, I would like to close on something that I think a lot of us are kind of forgetting about. Let's assume that we won every single argument that has been raised, that is, we got EPA to look at the total concentration as opposed to the leachate, consider the characteristic level as opposed to this 10,000 times drinking water standard, still, Mr. Chairman, I believe that under EPA's present interpretation of Congressional intent, they would say that business should continue as usual at every landfill in the country.

I stood next to an EPA staffer as he was explaining to the operator of a landfill how the ban would affect him. He was told—and this is consistent with the proposal and the quotes are in my testimony from the Federal Register to back up this statement—that the landfill ban would have no effect on California metals even if they fell subject to the ban so long as they were solidified, so long as they were no longer liquid.

Now, I recognize Congress states liquid wastes associated with the waste are the target, but Congress also prevented liquid wastes from going into landfills in another section. EPA has taken the position that dilution will not be allowed. Yet, normal practice at every landfill in this country, to my knowledge, is to take liquid waste today before the California ban and dilute it with kiln dust, usually winding up with two to three times the waste. For every 1 ton that goes in, 3 tons come out, 2 to 3 tons.

It is now a solid, but you have done nothing to improve the leachability of the metals in that waste. They will leach out just as quickly, so you have three times more waste.

EPA says that is okay. Now, I ask you, Senator, if that was okay, why did Congress go through the trouble of coming up with the land ban provisions which were meant to go beyond, in my opinion, the simple tying up of liquids in the waste.

I think this is something that has to be directly addressed by the Agency in order to keep from making a mockery of the land ban provisions.

I thank you.

Senator **GRAHAM**. Thank you, sir.

Mr. William Ziegler, Vice President for Health, Safety, and Environmental Affairs for Thermalkem.

STATEMENT OF WILLIAM ZIEGLER, VICE PRESIDENT FOR HEALTH, SAFETY, AND ENVIRONMENTAL AFFAIRS, THERMALKEM, ROCK HILL, SC

Mr. **ZIEGLER**. Thank you. I appreciate the opportunity to testify today.

I am Vice President of two treatment facilities, Thermalkem in South Carolina which is one of the 15 hazardous waste incineration facilities in the country and an inorganic treatment facility called Cyanokem in Detroit, Michigan.

I would like to focus in my testimony on cyanide bearing waste. Our most unique capability at our Detroit facility is the treatment of cyanide bearing waste, particularly difficult to treat complex cyanides and highly concentrated waste. It is safe to say that we are the largest treater of cyanide waste in the country.

Our company has implemented many new process improvements and through-put efficiencies and has worked closely with Michigan DNR in anticipation of the upcoming land ban for cyanide waste. Based on our extensive operating and technical experience with cyanides and our knowledge of cyanide generation east of the Mississippi, we find that the cyanide land ban, as proposed, will have no impact on the types and quantity of cyanide waste going to land disposal.

I was glad to hear this morning that EPA is dropping the idea of the TCLP test for cyanide. Besides being unsafe, this would have practically set a limit of 20,000 to 50,000 parts per million on cyanide waste.

But the proposed test, as I understand it, the Paint filter test, is still not adequate. If the proposal now is to use the Paint filter test and test only the liquid that goes through the Paint filter, a great deal of cyanide left behind in the solid fraction will still be land disposed and will still pose a substantial environmental threat.

It must be kept in mind that cyanides are highly mobile, easily leachable and soluble, and highly reactive materials. Even in the solid form, they can easily migrate.

I propose that the standard be based on 1000 ppm measured on the total sample, not a leachate and not on what passed through a Paint filter. Further, the standard must be applied to all waste, not just liquids.

Before I discuss the impact of this kind of approach, I would like to comment briefly on the toxicity of cyanides.

Cyanides are highly toxic, lethal materials, and they are highly mobile and soluble. They are far from stable materials.

The hazardous waste regulations to date on cyanides have been, at best, vague. We know that cyanides are nothing to fool around with. Examples like the underground cyanide fires during the 1970s at the number 3 ranked NPL site, the Kramer Landfill in Mantua, New Jersey, provides one example of the dangers of mismanagement of cyanide waste in a land disposal scenario.

We heard the comments this morning from NRDC concerning the effective level of cyanides in the drinking water which would be 15 times the safe level for a child. It is also inconsistent that EPA, in a guidance document, recommends that landfills not accept cyanides in excess of 250 ppm total for the protection of their workers but yet, in this proposal, we see levels in the range of 20,000 to 50,000 ppm cyanide.

In the present practice of cyanide disposal, it appears that landfills located in four States accept quantities as high as 70,000 ppm or 7 percent cyanide. Higher levels than this are allowed in various States on a case by case basis.

Our company has looked very hard at the cyanide generation, mainly east of the Mississippi which is an area that our market is focused in. What we see is that 120,000 tons of cyanide are generated and shipped off-site per year. Of this 120,000 tons, 18,000 tons goes to landfills.

This sounds like good news in that it represents only 15 percent as currently going to land disposal, but in reality, this is a very highly concentrated fraction of cyanide. The range of cyanide in this fraction is .1 to 7 percent, and this fraction will not be touched by the proposed land disposal ban in July.

We are only talking about 18,000 tons per year east of the Mississippi. In that region, there are nine commercial treatment facilities. Our facility, one of these nine, has capacity for 137,000 tons a year for cyanide treatment, 137,000 tons versus 18,000 that could be displaced from land disposal.

Our process capability can reduce the level of cyanides by 99.95 percent. So, plenty of capacity does exist for treatment of cyanide waste, and we should also worry about the cyanide that goes to surface impoundments. There are over 200,000 surface impoundments across the country.

Further, there would be little economic impact from the treatment of this 18,000 tons of cyanide versus land filling. The economic impact would amount to $4.7 million a year. This is well below the $100 million a year criteria of Executive Order 12291 requiring an economic impact analysis.

By comparison, the solvent waste ban in November of 1986 banned 373,000 tons of solvent waste from disposal at a cost of $152 million a year.

Finally, in closing, I must encourage EPA to include solids in the cyanide land ban. Otherwise, you will be encouraging landfills or generators to perform solidification without treatment. By adding absorbants or solidification agents, a concentrated cyanide liquid can be made to pass the Paint filter test standard for cyanide or a leachate test long enough so it can still go to a land disposal scenario.

But on a long-term land disposal scenario, the cyanide can be released into the environment at dangerously high levels. Treatment must be mandated by not encouraging solidification.

Also, I have heard, too, that over the next three years in the various three fractions of listed waste that will be banned from land disposal, eventually cyanides will be completely addressed. But over this three-year period, over 70,000 tons of additional cyanide waste will go into land disposal units.

So, I urge EPA to go the distance with this upcoming July ban and ban completely the disposal of cyanides.

Senator GRAHAM. Thank you very much, Mr. Ziegler.

In the earlier testimony by the representative of CMA, it was stated that since EPA has not yet set best demonstrated treatment technology for particular waste, it must mean that treatment capacity does not exist for that waste. The statements that you have made indicate that there is sufficient capacity.

Do you mean that there is the technology and capacity for all the wastes which are included in the land disposal bans?

Mr. FORTUNA. I think there is no question about that. We have looked at that across our membership. There are no wastes that are touched by the California list restrictions for which we do not have either the capability or the capacity to handle with one possible exception, and that may be the organic solids, the halogenated organic compounds that are affected by the California list restrictions when present in solid form.

There probably is not sufficient rotary kiln capacity to handle those halogenated organics at this point in time, but aside from that, there is neither a capability nor a capacity question.

Senator GRAHAM. I think the thrust of all three of your comments is that the recent practices and proposed deferrals of EPA have dampened the incentives for treatment technologies and waste minimization. What do you think could be done to reverse that and create incentives for new technologies, their utilization, and waste minimization?

Mr. BIBKO. Senator, if I may briefly, I think that EPA—I really believe what I am about to say to get on a positive note—has a fantastic opportunity here to do something that is very rarely given an administrative agency such as EPA. That is to actually require pretreatment requirements that are more stringent than are now on the books without the tremendous cost increases that normally accompany such a quantum jump.

I can't speak for all industries, but I can give you one absolute example of actual savings that will result. A study has been done—I have the study right here before me and can introduce into the record—by the PQ Corporation, a company that makes fixation agents. They went down to a major facility in Texas, one of the largest in the country that takes hazardous wastes and solidifies them using kiln dust. The generator, in each case, pays, say, roughly $100 per ton to get rid of hazardous wastes in liquid form.

You all came along in Congress and said all right, now you have to solidify it. Now they started mixing kiln dust. The one ton went to three tons. Generators started paying $300 a ton, $200 to $300.

Now along comes chemical fixation, and what I am about to say is pretty generic to our competitors. This is not just a plug for

Chemfix. We all have the capability to do this to one degree or another. We can fix that waste to meet the solidification rules of the Paine filter test with a much lower volume increase, on the order of 10 to 20 percent in cases.

That means that now that is going to be $120 to dispose it at one ton of waste, not $300, and if chemicals in there are actually fixed.

So, in answer to your question, I think the best thing in the world EPA could do would be to really look seriously at the data that we have all submitted that shows that not only can it be done and can treatment really save money for industry not only through this but through delistings and other ways, and look for the positive side of treatment and not look at it as something that is just going to cost more money.

Mr. FORTUNA. I guess the incentive, Senator, would be in the form of a type of stratified or more stringent requirement on the placement of California waste in the ground. Right now, we are at the status quo right here. We know we have the capability to treat waste down to the ultimate levels that are going to be required for these materials in 1988, 1989, and 1990, the so-called out year restrictions.

But instead of just cruising along at the status quo and then dropping down very radically at some point after four or five years, what we are saying is the California list was intended to be a leveling off for metals and cyanides in particular to get us down and begin phasing us in so we didn't have such a radical shift in management practices and necessary treatment levels in one fell swoop.

That is what we need to do. We have the capability to go all the way down right now. These folks, Chemfix and Cyanokem and several other members of our Council have the ability to treat waste to non-hazardous levels.

If EPA were to require that today, however, there would be good segment of American industry that could not comply. We think this is a responsible sort of middle step or middle ground to begin the phase-in to take us to the ultimate treatment levels in the out years without doing it in one fell swoop.

Senator GRAHAM. What is your assessment of the current role which States are playing in this issue, and do you have any comments on the Federal-State partnership in achieving this glide slope that will bring us to our ultimate goal?

Mr. FORTUNA. Maybe I can start that one. I know you touched on that earlier, Senator, in some of your earlier questions, and I think it goes without saying that the States in their more progressive programs have really served as a template for many of the broader national restrictions that we have imposed nationwide.

It is also clear that many States—and I am glad you are chairing this instead of Mr. Reid from Nevada—because Florida has taken a number of very positive steps to seek and site and permit treatment capacity. I think Florida recognizes it is in a deficit situation in terms of capacity. It does not want to be penalized from the Superfund provision of not having adequate capacity. I have personally worked with the State in distributing a request for proposal for solvent reclaim and other facilities in the State.

The problem, though, I think that we are running into is this. All the State people on the panel talked about resources, and I think there are two things. There is a vast increase in responsibility that is being shifted to the States in terms of all the new provisions.

RCRA didn't mean a whole hell of a lot three or four years ago. There wasn't too much to implement and there was even more money to do it then.

What we are really doing now, though, is paying the price for the legacy of we can do more with less of a few years ago. State grant monies are miniscule; responsibilities are going up. And I think as a result of this countercurrent flow of responsibilities and resources that many States are trying to become more active at restricting wastes that are coming into their State than being a national partner in a scheme of waste restrictions.

States are saying we don't have the resources to deal with a lot of these problems. One way to try to stop it is by limiting the number of permits and siting issues we have to deal with because we just don't have the resources.

So, I think that is really a starting point for a domino effect of adverse developments in the Federal-State relationship that is really at the fulcrum or at the base of many of our capacity shortages.

We are here this morning dealing with what I would call a demand question which is how do we create the demand for proper treatment capacity. However, the demand side of the equation has to be answered on the supply side as well, and when we turn to how are we going to supply the proper capacity, then we begin running into problems with authorized States and States seeking to not expand treatment capacity because they really don't have the resources to deal with those kinds of very complex problems.

Mr. **Bibko**. Senator, specific to the land ban provisions before us and the State issue, I think there is one big danger that really hasn't been brought out here, and that is that several States that we have spoken to in our business activities have indicated they are going to sit back and wait for the Federal Government to do all the expensive work of developing the standards. And even though States such as Louisiana, for example, now have statutes on the books similar to land ban provisions, they are not promulgating any regulations, assuming that the Feds are going to do it.

Now, if the Feds hold back and delay one or two years while they review data that we feel is here today, it is going to have a ripple effect throughout the country and we think an awful lot of waste is going to continue going into landfills that, quite frankly, could be economically treated today.

Senator **Graham**. Are there any other comments?

[No response.]

If not, I wish to thank you as well as the others who have participated in the hearing today.

The record will remain open for the remainder of the day to reflect any further questions or comments by any other members of the committee.

Thank you very much.

[Whereupon, at 11:58 a.m., the subcommittee adjourned, to reconvene subject to the call of the Chair.]

[Statements submitted for the record follow:]

STATEMENT OF
J. WINSTON PORTER
ASSISTANT ADMINISTRATOR FOR
SOLID WASTE AND EMERGENCY RESPONSE
U.S. ENVIRONMENTAL PROTECTION AGENCY
BEFORE THE
SUBCOMMITTEE ON HAZARDOUS WASTE AND TOXIC SUBSTANCES
OF THE
COMMITTEE ON ENVIRONMENT AND PUBLIC WORKS
U.S. SENATE
JUNE 5, 1987

Mr. Chairman and members of the Subcommittee, I am J. Winston Porter Assistant Adminstrator for Solid Waste and Emergency Response. I am accompanied by Marcia Williams, Director of the Office of Solid Waste and Lisa Friedman, Associate General Counsel for Solid Waste and Emergency Response. I appreciate the opportunity to be here this morning to discuss with you our progress in implementing the land disposal restrictions program. In your letter of May 21, 1987, you asked a number of complex questions which I will attempt to respond to in the text of my testimony. I will be happy to respond in greater detail upon conclusion of my statement.

On November 8th, 1984, the Hazardous and Solid Waste Amendments (HSWA) were signed into law, imposing substantial new responsibilities and costs on those who manage hazardous waste. The amendments prohibit land disposal of hazardous waste beyond specified dates unless the waste is treated by specified methods or to specified levels, or a petition is submitted which demonstrates with a reasonable degree of certainty that there will be no migration of hazardous constituents from the waste's disposal unit or injection zone for as long as the waste remains hazardous.

The requirement that hazardous wastes be treated prior to emplacement in a hazardous waste land disposal facility, or achieve concentration levels equal to that achieved by best demonstrated available treatment, is a major departure in the status quo of hazardous waste management in the United States. Treatment prior to land disposal helps assure that the risks of land disposal are reduced.

Implementation of the land disposal restrictions program will require building a hazardous waste treatment infrastructure in less than half a decade's time to handle the large and complex hazardous waste stream generated in the United States. This presents a formidable challenge to the Agency, states and regulated community and will require the close cooperation of all parties to insure that the program is successful.

To meet this formidable challenge the Agency has committed significant RCRA resources to develop this unprecedented and complex program. In this fiscal year the Office of Solid Waste has committed 30 work years and approximately eight million dollars in extramural resources in support of the land disposal restrictions program.

The Agency uses two types of information to develop treatment standards. First, the Agency must determine the appropriate types of treatment for the diverse hazardous waste streams that are generated. In accord with section 3004 (m), the Agency has developed a protocol for setting levels or methods of treatment that substantially reduce the toxicity or mobility of the hazardous constituents for specific waste streams. The criteria for determining the treatment performance levels is based on identifying the the performance capability of the best demonstrated available treatment technologies.

In order to determine when a prohibition goes into effect, the Agency must next identify the available treatment capacity, based on the types of protective treatment technologies that are capable of achieving the treatment performance levels, and the amounts of and demand for these technologies. If adequate capacity exists, then the statutory date for the prohibition of the waste goes into effect immediately. If there is a national capacity shortfall for a particular waste, then an extension of the effective date on the prohibition can be granted for up to two years. If there is an individual shortfall and a binding contractual commitment to construct or utilize protective treatment technology, the effective date for a particular generator's waste can be extended for up to two years on a case by case basis.

The Agency is using 1981 capacity survey data, supplemented by more current information we developed or received in public comment, to estimate available treatment capacity for the first two groups of wastes affected by the prohibitions, namely certain solvent wastes and dioxin containing wastes, and the "California list" wastes which will soon be finalized. While these capacity data have proven adequate for the first two phases of the land ban program we are getting ready to deploy a comprehensive two-part survey that will greatly enhance our ability to set effective dates dates for the balance of the wastes that are subject to the land ban program. The survey has been designed to give us a better understanding of capacity in general and will give us greater insight as to how generators are changing their management practices in response to the ban program. This knowledge of their management behavior will help us better understand how the land ban drives the treatment of waste, waste minimization practices and finally the utilization of on-site or commerical disposal capacity.

At this point I'd like to focus on some of the issues we are deliberating that affect setting effective dates and treatment requirements for wastes that will be captured by the "California list". Before I address these issues I am happy to report that we plan to take action regarding the final "California list" statutory provision before the deadline of July 8, 1987.

The "California list" statutory provision sets effective dates and treatment standards for liquid hazardous wastes that contain PCB's, cyanides, or any of eight elemental metals above certain specified concentrations, or those liquid wastes that have a pH of less than two. The "California list" also covers liquid and non-liquid hazardous wastes that contain halogenated organic compounds (HOC's) above specified concentrations.

The Committee inquired specifically if the statutory concentration levels, which the Agency proposed initially to implement, are adequate to protect human health and the environment, or if more stringent levels should be substituted. The statute directs the Agency to substitute more stringent trigger concentration levels when necessary to protect human health and the environment. In considering the protectiveness of these concentration levels we are examining both the toxicity of these constituents and, equally as important, the potential for exposure to these wastes in the context of their management. In doing so, we are taking into account the long-term uncertainties associated with land disposal, and the goal of managing hazardous wastes properly in the first instance. These are the factors the statute mandates for analysis. As a result of this analysis, we are actively considering issuing a notice soliciting further comment on the issue of lowering the statutory levels for metals and cyanides, and also establishing treatment standards for these wastes.

In addition to addressing the issue of lowering the levels for the metal bearing wastes in the "California list" final rule we are also examining the different implications of using a total waste analysis test versus a leach test to determine whether the treatment levels have been met. The total waste analysis approach looks solely at the toxicity of the waste constituents while the leach tests combine toxicity considerations with exposure potential.

In the final rule, we are tentatively expecting to determine compliance with the statutory levels in the same way as used by the state of California, that is, by using analysis of the liquids only for the metals and cyanides. This approach also would reflect the statutory language, which refers to liquids, and free liquids associatd with sludges or solids. For HOC's and PCB's, we are considering requiring a total constituent analysis, in accord with the statutory language which refers to "total concentrations" of HOC's and which references the long-standing Agency rules for PCB's which use a total constituent approach.

At this juncture I would like to turn to the Committee's request to address the effects of the ban on the hazardous waste management system. Under the November 7, 1986 final rule, EPA estimated that a total of nearly 40 million gallons per year of solvent-containing wastes were subject to land disposal restrictions, effective November 8, 1986. Because of the lack of data on constituent concentrations in waste streams, EPA does not currently have an estimate of waste which will be captured by "California list" standards. Total volumes of waste with California list constituents which are land disposed annually were based on the 1981 survey. As we have mentioned earlier, the survey will allow us to better estimate the waste captured by the California list. Based on this information, EPA promulgated currently effective rules prohibiting land disposal of most of the concentrated solvent wastes. We also proposed that the statutory bans for metals, cyanides, corrosive wastes, and low concentration liquid HOC wastes go into effect immediately.

In the near term it will be difficult to predict the effect of the land disposal bans. Some wastes that have been banned or will be banned were already being treated prior to the imposition of their specific effective dates. Furthermore, because of the substantial costs of treatment we are expecting changes in the way in which generators manage their hazardous wastes. We expect management changes to include efforts at waste minimization such as recycling, process changes, and product substitution. We cannot yet predict whether generators of particular waste streams will develop on-site capacity or will utilize off-site commercial capacity.

Other legal requirements over and above the land disposal restrictions will also influence generators' decisions as to the economical way to manage their hazardous waste streams. In particular, it will be difficult to sort out the effect of such requirements as the minimum technology requirements, together with the stigma and liability of management of hazardous wastes, from the specific effect of the land disposal restrictions.

The effect of the land bans on certain solvent wastes and dioxin-containing wastes, which were banned in the November 7, 1986 rulemaking, can be measured indirectly by noting how few requests we have had for either requests for case by case extensions of the effective dates, or submittals of requests for treatment variances. The lack of these requests suggests that generators have found adequate treatment capacity and that our treatment performance levels are achievable. This is not to say there are no costs associated with the land disposal restrictions program. We have estimated that the total cost of this program to the regulated community is approximately $150 million for solvents and dioxins and $100 million for the "California list" constituents. At the present we are developing a means of more formally evaluating the effects of the land disposal restrictions program in terms of environmental benefit.

Initially, this effort will be more anecdotal, focusing on enforcement results and measuring progress in permitting of treatment activity. Finally, once the ban program is in place we intend to have a comprehensive evaluation of the program's effect on reducing the risks of land disposal of hazardous waste.

To insure the successful implementation of the program, the Agency is actively pursuing several different activities designed to help the regions, states and regulated community. The Agency has developed an enforcement strategy for the land disposal restrictions that targets the strategic points in the hazardous waste management system to develop an effective enforcement presence. To date, the Agency has conducted training in all the regions and many of the states in understanding the program and the enforcement strategy in particular. To date, over fifty inspections have been conducted since the initial phase of the restrictions program started in November of 1986.

The Agency has also conducted a special outreach program aimed at both the regulated community and states to help them understand what is required of them under the land disposal ban program. This initiative includes a series of public meetings held around the country that start with an audio visual presentation and are followed by question and answer sessions. The Agency has also prepared a variety of printed materials that provide guidance and typical questions and answers. The outreach program is especially important because of the short time frame available for the regulated community to come into compliance and the states and regions to enforce the land ban regulations.

I would be happy to answer any questions the members of the subcommittee may have.

TESTIMONY OF
LANGDON MARSH
EXECUTIVE DEPUTY COMMISSIONER
NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION

BEFORE
THE
UNITED STATES SENATE
SUBCOMMITTEE ON
HAZARDOUS WASTE AND TOXIC SUBSTANCES
WASHINGTON, D.C.

JUNE 5, 1987

MR. CHAIRMAN AND HONORABLE MEMBERS, MY NAME IS LANGDON MARSH AND I AM THE EXECUTIVE DEPUTY COMMISSIONER OF THE NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION. I APPRECIATE THE OPPORTUNITY TO BE HERE TODAY TO DISCUSS THE IMPLEMENTATION OF THE FEDERAL LAND DISPOSAL RESTRICTIONS REQUIRED BY THE 1984 AMENDMENTS TO THE RESOURCE CONSERVATION AND RECOVERY ACT.

NEW YORK STATE WHOLEHEARTEDLY AGREES THAT THE LAND DISPOSAL OF HAZARDOUS WASTES SHOULD BE PHASED OUT AS AN ACCEPTABLE METHOD OF HAZARDOUS WASTE MANAGEMENT.

TO ANSWER THE QUESTIONS POSED IN YOUR INVITATION TO SPEAK AT THIS HEARING, I NEED TO TELL YOU SOME BACKGROUND INFORMATION ABOUT THE NEW YORK STATE HAZARDOUS WASTE REGULATORY PROGRAM.

FIRST, NEW YORK STATE HAS BEEN PROGRESSIVELY BANNING THE LANDFILLING OF HAZARDOUS WASTE SINCE THE LATE 1970'S; STARTING WITH THE BANNING OF CERTAIN CARCINOGENS AND HIGHLY TOXIC COMPOUNDS. THESE BANS HAVE BEEN INSTITUTED THROUGH SPECIAL PERMIT CONDITIONS FOR OUR TWO COMMERCIAL LAND DISPOSAL FACILITIES. OUR MOST FAR REACHING SET OF RESTRICTIONS BECAME EFFECTIVE ON APRIL 30, 1984. INITIALLY, HAZARDOUS WASTE STREAMS CONTAINING FIVE PERCENT OR GREATER BY WEIGHT OF TOTAL CONCENTRATION OF HALOGENATED, NITROGENATED, AROMATIC AND VOLATILE ORGANIC CHEMICALS WERE BANNED FROM LANDBURIAL. THE SECOND PHASE OF THIS RESTRICTION BECAME EFFECTIVE ON MARCH 31, 1986. AS OF THAT DATE, THIS FIVE PERCENT LEVEL WAS REDUCED TO TWO PERCENT. A MORE DETAILED SUMMARY OF THE NEW YORK STATE LANDBURIAL RESTRICTIONS IS ATTACHED TO MY WRITTEN TESTIMONY. SECONDLY, NEW YORK STATE HAS HAD AN AGGRESSIVE PROGRAM TO ENCOURAGE OPERATING HAZARDOUS WASTE LAND DISPOSAL FACILITIES TO CLOSE. THE REQUIREMENTS OF THE HAZARDOUS AND SOLID WASTE AMENDMENTS OF 1984 CREATED ADDITIONAL INCENTIVES FOR LAND DISPOSAL FACILITIES TO CLOSE. BACK IN NOVEMBER 1980, THERE WERE ABOUT 43 OPERATING HAZARDOUS WASTE LAND DISPOSAL FACILITIES IN NEW YORK. AFTER NOVEMBER 1988, WE EXPECT ONLY THREE HAZARDOUS WASTE LAND DISPOSAL FACILITIES TO REMAIN IN OPERATION. ONE IS A CAPTIVE LANDFILL FOR INCINERATOR RESIDUE AND WASTE WATER TREATMENT PLANT SLUDGE. ANOTHER, OPERATED BY CECOS INTERNATIONAL, WILL HAVE ONLY A COMMERCIAL LANDFILL. THE LAST, OPERATED BY CHEMICAL WASTE MANAGEMENT (SCA) WILL HAVE BOTH A COMMERCIAL LANDFILL AND A SURFACE IMPOUNDMENT. HOWEVER, THIS SURFACE IMPOUNDMENT WILL ONLY BE USED FOR AQUEOUS HAZARDOUS WASTE THAT HAS BEEN SUBJECTED TO AGGRESSIVE BIOLOGIC AND ACTIVATED CARBON TREATMENT.

HAZARDOUS WASTE FACILITIES ARE REPLACING THEIR SURFACE IMPOUNDMENTS WITH TANKS AND OTHERWISE MODIFYING THEIR OPERATIONS TO ELIMINATE THE NEED FOR SURFACE IMPOUNDMENTS, WASTE PILES AND LANDFILLS. THUS, THE NUMBER AND TYPE OF NEW YORK STATE HAZARDOUS WASTE LAND DISPOSAL FACILITIES WILL BE VERY LIMITED. THESE NEW YORK STATE EFFORTS WILL LIMIT THE IMPACT OF FEDERAL HAZARDOUS WASTE LAND DISPOSAL RESTRICTIONS IN NEW YORK STATE.

WITH THIS BACKGROUND, I WILL ADDRESS THE QUESTIONS RAISED IN YOUR INVITATION.

1. WE CANNOT READILY QUANTIFY THE IMPACTS OF EPA'S SOLVENT AND DIOXIN LAND DISPOSAL RESTRICTIONS IN NEW YORK. NEW YORK STATE HAS HIRED A CONSULTING FIRM, ERM-NORTHEAST, TO UPDATE OUR HAZARDOUS WASTE FACILITY CAPACITY NEEDS SURVEY. THIS REPORT WILL EVALUATE PAST, PRESENT, AND FUTURE IMPACTS OF BOTH STATE AND FEDERAL LAND DISPOSAL RESTRICTIONS. WHEN THIS STUDY IS COMPLETED IN EARLY 1988, WE WILL HAVE QUANTIFIED THE EFFECTS IN NEW YORK STATE OF THE FEDERAL LAND DISPOSAL RESTRICTIONS. I HAVE ATTACHED A COPY OF THE MARCH 1985 NEEDS SURVEY FOR YOUR INFORMATION.

   WE CAN, HOWEVER, MAKE SOME GENERAL OBSERVATIONS ABOUT THE EFFECTS OF THE SOLVENT AND DIOXIN RULE IN NEW YORK STATE:

   A. SINCE NEW YORK STATE ALREADY HAD A TWO PERCENT BAN ON THE SOLVENT WASTES AT THE COMMERCIAL HAZARDOUS WASTE LAND DISPOSAL FACILITIES, THE FEDERAL RESTRICTIONS RESULTED IN ONLY A TIGHTENING OF OUR RESTRICTION FROM TWO PERCENT TO ONE PERCENT. THE NEW YORK STATE TWO PERCENT RESTRICTION INCLUDES MANY MORE CHEMICAL COMPOUNDS THAN THE EPA ONE PERCENT SOLVENT RESTRICTION, THEREFORE MANY HAZARDOUS WASTES THAT MAY BE LANDFILLED UNDER THE USEPA RESTRICTIONS CANNOT BE LANDFILLED UNDER THE NEW YORK STATE RESTRICTION.

   B. THE NON-COMMERCIAL HAZARDOUS WASTE LAND DISPOSAL FACILITIES THAT HANDLED SOLVENT WASTES IN NEW YORK STATE HAD NOT BEEN HANDLING SOLVENT WASTES WITH CONCENTRATIONS OF ONE PERCENT OR MORE, SO THERE WAS NO EFFECT ON THESE FACILITIES.

   C. THE ONLY SUBSTANTIAL EFFECT OF THE FEDERAL HAZARDOUS WASTE LAND DISPOSAL RESTRICTIONS MAY BE ON NEW YORK STATE GENERATORS WHO HAD LAND DISPOSED THEIR SOLVENT WASTES OUTSIDE OF NEW YORK STATE PRIOR TO THE FEDERAL SOLVENT AND DIOXIN RESTRICTIONS. HOWEVER, WE HAVE NOT RECEIVED ANY REQUESTS FOR EXTRA STORAGE OR EXTENSION OF STORAGE TIME FROM ANY GENERATORS, SO THERE IS NO EVIDENCE OF TREATMENT OR CAPACITY PROBLEMS FOR THESE HAZARDOUS WASTES.

   D. FINALLY, WHILE NOT DIRECTLY CAUSED BY THE LAND DISPOSAL RESTRICTIONS, THERE IS A NATIONAL CAPACITY PROBLEM FOR THE THERMAL DESTRUCTION AND LAND DISPOSAL OF DIOXIN BEARING WASTE. THE USEPA NEEDS TO DEVELOP A NATIONAL STRATEGY FOR THE TREATMENT, STORAGE AND DISPOSAL OF DIOXIN WASTES.

2. THE EFFECTS OF THE USEPA PROPOSAL FOR RESTRICTING "CALIFORNIA LIST" WASTES ALSO CANNOT BE READILY QUANTIFIED AT THIS TIME. AS MENTIONED PREVIOUSLY, WE

ARE CURRENTLY CONDUCTING A STUDY THAT WILL QUANTIFY THE IMPACT ON NEW YORK STATE OF ALL FEDERAL LAND DISPOSAL RESTRICTIONS. WE CAN, HOWEVER, MAKE SOME OBSERVATIONS BASED ON OUR KNOWLEDGE OF CURRENT WASTE MANAGEMENT IN NEW YORK STATE:

A. THE PROPOSED "CALIFORNIA LIST" RESTRICTIONS ON LIQUID WASTES ARE NOT EXPECTED TO HAVE ANY LONG-TERM IMPACT ON HAZARDOUS WASTE MANAGEMENT FACILITIES IN NEW YORK SINCE, AS MENTIONED EARLIER, THE USE OF SURFACE IMPOUNDMENTS IS BEING SWITCHED OVER TO TANKS INDEPENDENT OF EPA LAND DISPOSAL RESTRICTIONS.

B. THE PROPOSED "CALIFORNIA LIST" RESTRICTIONS ON HALOGENATED ORGANIC COMPOUNDS SHOULD NOT HAVE ANY EFFECT ON NEW YORK, SINCE OUR EXISTING LANDBURIAL RESTRICTIONS ARE MORE STRINGENT THAN THE FEDERAL RESTRICTIONS. EVEN THOUGH THE PROPOSED RULE SEEMS MORE STRINGENT AT 0.1 PERCENT BY WEIGHT HALOGENATED ORGANIC COMPOUNDS, THE PROPOSED CALIFORNIA LIST RESTRICTION EMPLOYS THE TOXICITY CHARACTERISTIC LEACHING PROCEDURE (TCLP) FOR MEASURING HALOGENATED ORGANIC COMPOUNDS CONCENTRATION. INHERENT TO THE TCLP PROCEDURE IS A 20 TO ONE DILUTION OF WASTE BY THE EXTRACTIVE LIQUID. WE BELIEVE HAZARDOUS WASTES THAT PASS THE 0.1 PERCENT HALOGENATED ORGANIC COMPOUNDS RESTRICTION IN THE PROPOSED RULE WOULD BE RESTRICTED IN NEW YORK UNDER OUR TWO PERCENT RESTRICTION DUE TO THE TCLP DILUTION AND THE POOR EXTRACTION EFFICIENCY OF THE TCLP WHICH I WILL DISCUSS IN A MOMENT.

C. SOME NEW YORK STATE GENERATORS WHO CURRENTLY SHIP THEIR WASTES OUT OF STATE WILL BE AFFECTED BY THE "CALIFORNIA LIST" RULE, BUT WE ARE NOT PRESENTLY AWARE OF ANY PROBLEMS.

3. NEW YORK STATE FEELS THAT THE CONCENTRATION LIMITS PROPOSED BY THE USEPA MAY NOT BE LOW ENOUGH TO BE CONSIDERED COMPLETELY PROTECTIVE OF THE ENVIRONMENT IN NEW YORK STATE. THE USEPA SHOULD CONDUCT THE SAME RIGOROUS ANALYSIS OF THE CONSTITUENTS IN QUESTION AS FOR ALL OTHER POTENTIALLY RESTRICTED WASTES. HOWEVER, DUE TO PRESENT TIME CONSTRAINTS, THE USEPA SHOULD BE ENCOURAGED TO FINALIZE THE "CALIFORNIA LIST" RESTRICTIONS, PROVIDED THAT THEY REQUIRE A TOTAL CONTENT ANALYSIS OF THE HALOGENATED ORGANIC COMPOUNDS SINCE THE TCLP IS NOT APPROPRIATE FOR MANY OF THESE COMPOUNDS.

4. WE CANNOT READILY DETERMINE WHAT CAPACITY EXISTS IN NEW YORK STATE TO TREAT WASTES RESTRICTED UNDER THE AGENCY PROPOSAL, OR WHAT CAPACITY EXISTS TO TREAT WASTES AT LOWER CONCENTRATIONS. THE MAJORITY OF AQUEOUS HAZARDOUS WASTES GENERATED IN NEW YORK ARE TREATED IN TANKS ON THE SITE OF GENERATION, AND THESE TYPES OF FACILITIES DO NOT APPEAR TO HAVE ANY MAJOR PROBLEMS WITH CAPACITY.

THE HALOGENATED ORGANIC COMPOUNDS MAY PRESENT A CAPACITY PROBLEM, SINCE NEW YORK DOES NOT HAVE SUFFICIENT COMMERCIAL HAZARDOUS WASTE INCINERATION CAPACITY TO TREAT THE WASTES GENERATED WITHIN ITS BOUNDARIES. THE ACTUAL AMOUNT OF NEEDED CAPACITY WILL BE QUANTIFIED WHEN THE UPDATE OF OUR CAPACITY NEEDS SURVEY IS COMPLETED IN EARLY 1988.

THE USEPA SHOULD CONDUCT AN IN-DEPTH CAPACITY STUDY TO IDENTIFY NATIONAL CAPACITY NEEDS, SINCE IT IS OUR EXPERIENCE THAT HAZARDOUS WASTE MANAGEMENT DOES NOT RECOGNIZE STATE BOUNDARIES.

5. TO DETERMINE IF A WASTE MEETS THE 1000 MG/KG LIMIT FOR HALOGENATED ORGANIC COMPOUNDS, THE PROPOSED RULE UTILIZES THE TOXICITY CHARACTERISTIC LEACHING PROCEDURE (TCLP) RATHER THAN A TOTAL CONTENT TEST. THE TCLP IS BASICALLY AN EXTRACTION PROCEDURE USING SLIGHTLY ACIDIFIED WATER. MANY HALOGENATED ORGANIC COMPOUNDS ARE RELATIVELY INSOLUBLE IN WATER AND IT IS POSSIBLE THAT A HIGHLY CONTAMINATED WASTE WOULD NOT BE RESTRICTED UNDER THE PROPOSED RULE. AS MENTIONED EARLIER, THE EXTRACTION ALSO EMPLOYS A TWENTY TO ONE DILUTION WHICH WOULD ALLOW A WASTE CONTAMINATED WITH UP TO 2% BY WEIGHT HALOGENATED ORGANIC COMPOUNDS TO BE LAND DISPOSED. SINCE THE USEPA HAS NOT ESTABLISHED AN ALTERNATIVE TREATMENT STANDARD UNDER SECTION 3004(M), USE OF THE TCLP DOES NOT APPEAR TO BE CONSISTENT WITH THE TOTAL CONTENT RESTRICTIONS IN THE HAZARDOUS AND SOLID WASTE AMENDMENTS.

6. THE MAJOR DEFECT THAT WE SEE IN THE USEPA HAZARDOUS WASTE LAND DISPOSAL RESTRICTION PROGRAM IS THAT USEPA HAS ONLY IDENTIFIED AND LISTED A SMALL PORTION OF THE UNIVERSE OF HAZARDOUS WASTE. ACCORDING TO A GAO REPORT DATED DECEMBER 1986 ENTITLED HAZARDOUS WASTE - EPA HAS MADE LIMITED PROGRESS IN DETERMINING THE WASTES TO BE REGULATED, THIS PORTION MAY BE AS LITTLE AS 10 PERCENT. AS AN EXAMPLE, TWO WASTES CAN HAVE ESSENTIALLY IDENTICAL CHEMICAL COMPOSITIONS AND WHILE ONE IS REGULATED AS A HAZARDOUS WASTE, THE OTHER IS NOT. BECAUSE OF THE LAND DISPOSAL RESTRICTIONS, THE REGULATED HAZARDOUS WASTE CANNOT BE DISPOSED IN A HAZARDOUS WASTE LANDFILL, WHILE THE IDENTICAL NON-HAZARDOUS WASTE CAN GO TO ANY MUNICIPAL (SUBTITLE D) LANDFILL.

A SPECIFIC PROBLEM WE HAVE WITH THE EPA LAND DISPOSAL RESTRICTION PROGRAM IS THAT THE TOXICITY CHARACTERISTIC LEACHING PROCEDURE (TCLP), THE UNDERPINNING OF THE PROGRAM, DOES NOT ACCURATELY CHARACTERIZE THE MOBILITY OF ALL TYPES OF CHEMICALS FROM ALL TYPES OF WASTES. THE ASSUMPTIONS WHICH USEPA USED IN DEVELOPING THE TCLP FOR USE WITH THE LAND DISPOSAL RESTRICTIONS OVERSIMPLIFY THE CONDITIONS IN A HAZARDOUS WASTE LANDFILL. FOR EXAMPLE, IN DEVELOPING THE PROCEDURE, EPA ASSUMED THAT A HAZARDOUS WASTE WAS DISPOSED WITH MUNICIPAL REFUSE, NOT WITH OTHER HAZARDOUS WASTES WHICH WOULD MORE AGGRESSIVELY LEACH OUT THE TOXIC CHEMICALS.

Attachments to
Testimony of Langdon Marsh

Before the
U.S. Senate Subcommittee on
Hazardous Waste and Toxic Substances

June 5, 1987

1. Summary of New York State landburial restrictions.
2. ERM Hazardous Waste Treatment Facilities Needs Survey, March 1985.
3. Responsiveness Summary to Task Force Report, June 1985.
4. New York State Hazardous Waste Treatment Facilities Task Force Report, September 1985.

Legislative Commission on
Toxic Substances and Hazardous Wastes

Senator John B. Daly
Chairman

PLEASE RESPOND:
☐ Legislative Office Building
Albany, NY 12247
(518) 455-2100
☐ 1316 Main Street
Niagara Falls, NY 14301
(716) 282-7268

June 10, 1987

The Honorable Max Baucus
United States Senate
Washington, D.C. 20510

Dear Senator Baucus:

Enclosed is a legislative resolution adopted by the New York State Senate relating to the management of hazardous wastes. This resolution urges the Congress to amend the federal Resource Conservation and Recovery Act (42 U.S.C. 6901 et seq.) to clarify waste minimization certification requirements applying to hazardous waste generators.

Specifically, the resolution requests that the Congress direct the United States Environmental Protection Agency to issue standards or guidelines detailing the steps that a industrial generator must undertake in certifying that it has minimized its generation of hazardous wastes (see 42 U.S.C. 6922(b), 6925(h)). The resolution also recommends that the Congress modify existing hazardous waste generation reporting requirements (42 U.S.C. 6922(a)) to include information necessary to monitor national progress on waste reduction. These actions on the part of Congress would implement two recommendations contained in a report prepared by the Commission evaluating incentives for hazardous waste reduction. I have enclosed a copy of the report.

It was my hope in introducing this resolution in the Senate that the waste reduction issue be given wider attention both in New York State and nationwide. The above recommendations provide a first step towards strengthening the nation's source reduction policies. I urge you to develop and support legislation accomplishing these tasks.

Sincerely,

John B. Daly
Chairman

JBD:ab
Encs.

State of New York

Legislative Resolution

Senate No. 1169

BY: Senator Daly

URGING the Congress to amend the federal Resource Conservation and Recovery Act in relation to hazardous waste minimization certification and generator reporting guidelines

WHEREAS, There is a pressing need for industries to reduce the quantity and toxicity of hazardous wastes they generate; and

WHEREAS, The Congress has declared, in section 1003(b) of the federal Resource Conservation and Recovery Act, that it is the national policy of the United States that, wherever feasible, the generation of hazardous waste is to be reduced or eliminated as expeditiously as possible; and

WHEREAS, To implement this national policy, the Congress has required, in sections 3002(b) and 3005(h) of the Resource Conservation and Recovery Act, that hazardous waste generators certify that they have in place a program to reduce the volume and toxicity of hazardous waste they generate to the degree determined to be economically practicable; and

WHEREAS, The United States Environmental Protection Agency has adopted the position that it lacks the statutory authority to issue guidelines or standards detailing the steps or activities hazardous waste generators must undertake to comply with the above waste minimization certification requirement; and

WHEREAS, It is in both New York State's and the national interest that guidelines or standards be established to clarify what actions or practices on the part of hazardous waste generators constitute an acceptable waste minimization program; and

WHEREAS, Because current hazardous waste generator reporting requirements, as mandated in section 3002(a) of the Resource Conservation and Recovery Act, require firms only to report the total quantity of wastes they generate, and do not require firms to precisely report the amount of toxic or hazardous constituents in wastes they generate, or variations in the amount of waste they generate resulting from changes in manufacturing or economic output rather than changes in production processes, it is not possible to accurately determine the extent to which firms are adopting waste reduction processes and technologies; now, therefore, be it

RESOLVED, That this Legislative Body pause in its deliberations to urge the Congress to amend sections 3002(b) and 3005(h) of the Resource Conservation and Recovery Act to direct the United States Environmental Protection Agency to develop and publish guidelines or standards describing in detail the steps and activities hazardous waste generators must undertake in certifying that they have reduced their generation of wastes to the maximum extent determined to be economically feasible; and be it further

RESOLVED, That this Legislative Body urges the Congress to amend section 3002(a) of the Resource Conservation and Recovery Act to direct the United States Environmental Protection Agency to promulgate regulations requiring hazardous waste generators to report not only the total amount of hazardous wastes they generate, but also the amount of toxic or hazardous constituents in wastes they generate. Such regulations should also require hazardous waste generators to report the amount of hazardous waste generated per unit of manufacturing production or economic output, and should direct the United States Environmental Protection Agency to establish any other reporting requirements necessary to gauge national progress on reducing hazardous waste generation; and be it further

RESOLVED, That a copy of this Resolution, suitably engrossed, be transmitted to each member of the Congressional Delegation from the State of New York, to each member of the Senate Congressional Committee on Environment and Public Works, and to each member of the House Congressional Committee on Energy and Commerce.

ADOPTED IN SENATE ON
May 19, 1987

By order of the Senate,

Stephen F. Sloan

Stephen F. Sloan, Secretary

[Mr. Librizzi's response to a request from Senator Graham.]

STATE/FEDERAL ROLES IN A COMPREHENSIVE HAZARDOUS WASTE MANAGEMENT PROGRAM

In recent years, states and the federal government have enacted legislation and adopted regulations and policies regarding the management of hazardous waste. These actions have strengthened the standards applicable to many hazardous waste activities, established outright prohibitions against others and, in effect, provided an improved system for management of hazardous wastes.

These laws, regulations and policies, although presenting the framework for effective hazardous waste management, require a clear recognition of issues which cross program, legislation/regulatory, or media boundaries. For example, Superfund and RCRA should be administered in a coordinated manner to achieve the necessary protection of public health and environment in a timely, cost-effective and technically sound manner. Also, implementation of the land ban required by RCRA should be achieved in the context of emerging alternatives to waste disposal such as waste minimization. Therefore, it is appropriate and necessary that the states and federal government work together to assure that there is a comprehensive approach to hazardous waste management which can guide all regulatory efforts.

This comprehensive hazardous waste management program must, on the outset, rely on the acceptance of a hierarchy of alternative approaches to hazardous waste management. The hierarchy is as follows: source reduction, recycling, recovery, treatment and incineration and secure land disposal. With the generic acceptance of this hierarchy, the Hazardous Waste Management Program should look to:

(1) Address past management practices of hazardous waste through remediation

(2) Maintain a strong regulatory program to control current practices

(3) Prevent the creation of new contaminated hazardous waste sites

Remediation

The Superfund Amendments and Reauthorization Act (SARA) provides the national program for the cleanup of past practices. Both the federal and state governments must ensure that the financial commitment necessary to achieve the goals associated with hazardous waste site mitigation are available within the necessary timeframe. Delays in project completion because of unavailable funding should not be allowed. This will require careful and coordinated planning between EPA and the states. The states should have a more active role in such planning.

Implementation of SARA will also require that the federal government prepare the necessary guidances and policies. We would expect EPA to accomplish this task with major assistance from the states. In particular, EPA needs to address on a timely basis those issues that have major impact on successful implementation: RCRA/CERCLA Off-site Policy, Use of Publicly-owned Treatment Works (POTWs), Federal Facilities, etc. In addition, states should be delegated a larger portion of responsibility in implementing the program as indicated by SARA. EPA should move quickly to develop the guidance and policy to broaden state roles.

Regulatory Control and Enforcement

The second piece of the comprehensive program addresses the proper control of current waste handling practices and enforcement actions against violators of our regulatory requirements.

New Jersey currently has over 9,700 companies which have notified under the Resource Conservation and Recovery Act (RCRA) as hazardous waste handlers (Attachment VII). Of these, 4,200 were active in 1985, 260 are active treatment, storage, and disposal facilities, 164 will require hazardous waste facility permits and approximately 640 are expected to require corrective action. In 1985 these handlers generated over 9 million tons of hazardous waste.

The Department has an extensive program established to permit, monitor and inspect these facilities to assure compliance with existing state and federal laws and regulations. This program currently costs approximately $8 million to operate annually; 30 percent of these costs are provided under federal grants. Increases in enforcement and regulatory activities pursued under the RCRA Corrective Action Program and anticipated decreases in federal grant assistance will result in the need for increased financial support in reduced program effort.

We expect the federal government to develop the national guidances and regulations necessary to carry out the mandates of RCRA. Wes expect EPA to accomplish this task with input from the states. Program implementation should rest with the states. These regulations and guidances should be continually reevaluated to take into account past experience and to streamline and/or simplify as much as possible. We would also expect the federal government to provide sufficient funding to allow the state to implement these guidelines and regulations particularly as states take on more responsibility for corrective action.

Waste Minimization

Waste minimization will avoid the creation of new hazardous waste sites. In 1985 over 9.1 million tons of hazardous waste was generated in New Jersey. This represents a decline of up to 25 percent from that generated in 1983. The bulk of this decline results from facility closures as a result of new hazardous waste requirements under the Hazardous and Solid Waste Amendments of 1984.

There is a need for a more active role of EPA and the state regarding the reduction of the generation of hazardous waste. Many states like New Jersey are in fact aggressively pursuing waste minimization programs as an integral part of waste management. Attached are some accomplishments and initiatives for New Jersey. We need a similar aggressive posture at the federal level. Some thoughts on this federal role follow.

Should EPA take a more aggressive role in waste minimization?*

There is no question that EPA should be addressing the issue more vigorously. A more pertinent question though is how this should occur and who will determine the approach that will be most beneficial. Two mechanisms for positive input are (a) sponsorship of a technology development and transfer information data base, and (b) support of state initiatives dedicated to waste reduction.

(a) Technology Development and Transfer

Information regarding the generation, use and management of hazardous wastes and the pathways for potential environmental release is inadequate. A major coordinated data collection/management/standardization effort is required, based not on legislative/regulatory categories and criteria, but rather on multimedia/crossmedia release and reuse potential.

Dissemination to industry of information on available process changes and technology for waste reduction is an essential element of an effective waste minimization program.

EPA would do well to organize and dedicate funding to a "Process Technology Network (PTN). The purpose of PTN would be to provide an information base which would include all available data on current, state-of-the-art industrial process technologies. It is necessary to establish a single location to coordinate the acquisition, review and distribution of waste reduction data and information. The basis for this may be already in existence within EPA. A waste minimization office located at each EPA Region or in a hazardous waste research center within each Region could serve as a resource center to each state in the region. The state could then access the system's subject bibliography and availability through a computer link (similar to the successful Chemical Information Service developed by EPA).

The development of PTN is important for the efficient use of resources dedicated on the private, state and federal levels. Transfer of information would reduce redundancy now prevalent in the research and development field and would allow industrial process engineers and state environmental personnel to review and utilize the most advanced techniques.

Further, waste minimization efforts should address all hazardous wastes, not just those regulated under RCRA. RCRA based wastes are the appropriate starting point, however.

Other needed areas of federal involvement related to the PTN concept include:

* development of guidelines for effective technical assistance/ outreach efforts
* support for process redesign and innovative technology research
* coordination with state-sponsored, industry-specific or waste-stream specific research efforts.
* regulatory review of natural programs regarding impacts in waste minimization

(b) Federal Support of State Level Waste Reduction Initiatives

Resources in the form of EPA sponsored grants to the states should be expanded to encourage program development. The states cannot do it without adequate funding. In order to insure participation by the states, a link to other, more critical funding should be created. For example, EPA funding of certain waste management projects could be withdrawn if a state does not act to implement a waste reduction program. The criteria for what constitutes a viable program could be part of the state's RCRA grant and tied into those outputs. This would ensure program development and legitimate use of funding. The rationale is that the EPA should be willing to increase waste reduction efforts. In concept, this is similar to the "welfare vs. workfare" initiative announced by Governor Kean during his State of the State address in February. Recent guidance from EPA states that technology transfer projects were grant eligible in FY'88 although waste minimization was not part of the FY'88 RCRA Implementation Plan (RIP). Waste minimization should be recognized as an integral component of a comprehensive hazardous waste management program and be included in the FY'89 RIP.

Should the federal government take a more active role in siting hazardous waste facilities?

Absolutely not. The siting process is best administered through th states as it has been historically. State officials are closer to the environmental and political issues of their state and are therefore better able to address the issue.

The siting process continues on the state level using criteria sensitive to the needs of each state. If the siting criteria used effectively eliminates the potential for siting facilities, the criteria may be unrealistic and must be revised, or the sites chosen may have to be engineered to meet the criteria. This should be left up to the states.

However, the federal government can be more involved in several aspects to siting new hazardous waste facilities:

(1) be more aggressive in telling the critical story that we need adequate facilities to handle our waste and that NIMBY can have an adverse impact on our socio-economic activities and reduce our capability of adequately dealing with hazardous waste especially in hazardous waste site cleanups,

(2) serve as a national focus for planning purposes that can assist states in developing strategies for dealing with hazardous waste in particular as it relates to the requirements in SARA and,

(3) ensure that national programs establish priorities and ensure an expeditious process is developed for permitting a new hazardous waste facilities.

What are the existing policy options and preferred regulatory framework for encouraging waste minimization?

There are several existing policies and regulatory provisions which promote the concept of waste minimization. These are outlined below in the left hand column. On the right are preferred options and/or EPA's policy relative to those points on the left.

Existing	Preferred
a. Informal hierarchy of material/waste management approaches: In order of decling preference, these are: * source reduction * recycling * recovery * treatment and incineration * secure land disposal	a. Formal EPA endorsement and definition of terms in the hierarchy as guidance to state programs. According to EPA spokespersons, non-binding guidance regarding this and other waste minimization issues will be published in the Federal Register later this year.
b. Waste reuse by industry in an off-site manufacturing process. No treatment allowed prior to the reuse of the waste.	b. Amend regulations to allow some forms of treatment by either the generator or reuse facility which are integral to the manufacturing process.
c. Fee schedules as an incentive to reduce the generation of hazardous wastes.	c. Development of fee schedules should be left to the states. Parallel fees or taxes on the federal level are not recommended.

WASTE MINIMIZATION INITIATIVE

1 Hazardous Waste Fee Schedule
  - Volume of Waste Generated
  - Toxicity
  - Facility Type

2 Waste Audits
  - Non-regulatory
  - NJIT/Rutgers involvement

3 Research in Innovative Technology
  - A-2536
  - Matching Grants

4 Financial Incentive Evaluation
  - Taxes
  - Grants/loans

5 Technical Advisement/Assistance Program
  - Information sharing between industry and DEP

6 Regulatory Review

ACCOMPLISHMENTS OF NEW JERSEY'S WASTE MINIMIZATION PROGRAM

→ **HOUSEHOLD HAZARDOUS WASTE PROGRAM**
Removal of over 10,000 gallons and 2,400 pounds of household hazardous waste from the environment.

→ **HAZARDOUS WASTE REUSE FACILITY REGULATIONS**
Amendment to regulations allowing generators of hazardous waste to send their waste for reuse rather than disposal.

→ **HAZARDOUS WASTE SOURCE REDUCTION SEMINAR**
220 representatives of industry call for a waste reduction initiative by government.

→ **HAZARDOUS WASTE INFORMATION SERIES FOR INDUSTRY**
Hazardous Waste Minimization Fact Sheet published and distributed to over 10,000 New Jersey hazardous waste generators.

→ **WASTE MINIMIZATION SURVEY**
Distributed to New Jersey generators by D.E.P.

→ **DEVELOPMENT OF 6 POINT WASTE MINIMIZATION PROGRAM INITIATIVE**

TESTIMONY BEFORE THE HAZARDOUS WASTE & TOXIC SUBSTANCES SUBCOMMITTEE

JUNE 5, 1987

BY

William C. Child, Manager

DIVISION OF LAND POLLUTION CONTROL

IEPA

Good morning and thank you for the opportunity to comment on the land disposal restrictions imposed by the 1984 amendments to the Resource Conservation and Recovery Act (RCRA).

As you may know, Illinois is a major producer of hazardous wastes with nearly one-half billion gallons generated in our state every year. The Illinois EPA has been delegated authority to administer the RCRA program in Illinois. The agency is also charged with enforcing the provisions of the Environmental Protection Act and Pollution Control Board regulations.

Over the last several years the Illinois General Assembly and Pollution Control Board have imposed severe restrictions on disposal of hazardous wastes in Illinois. These restrictions are as follows:

- A 1981 amendment to the Environmental Protection Act prohibiting landfill disposal of hazardous wastes effective January 1, 1987, unless the generator and disposal site owner/operator can demonstrate that no reasonable alternative is available. In 1983, this schedule was accelerated for liquid hazardous wastes.

- Pollution Control Board rules which prohibit landfill disposal of wastes containing halogenated compounds, a class of organic solvents.

- Authority to prohibit by regulation the land burial of specific categories of hazardous wastes.

About the ban.....

In contrast to the multi-phase federal prohibition, the Illinois "Land Ban" is not an absolute disposal ban. Under the law, the Illinois EPA may authorize land disposal of hazardous wastes after the generator has demonstrated that, in light of technological feasibility and economic considerations, the waste cannot be reasonably recycled for reuse, incinerated, or chemically, physically or biologically treated to neutralize the waste and render in non-hazardous.

The "effect" of the ban in Illinois....

Since the "blanket" landfill ban became effective just a few months ago, there has not been time to statistically analyze its impact on waste management activities in Illinois. However, a few important observations can be made.

- The volume of commercially landfilled hazardous waste dropped 35 percent during the first quarter of 1987 as compared with the first quarter of 1986.

- The number of landfill permits is half the number of one year ago.

- The types of wastes now approved for disposal are less of an environmental hazardous and are generally more stable in a secure landfill.

Where did the hazardous waste go?

Much of the waste is defined as characteristically hazardous, i.e., ignitable, corrosive, reactive or EP Toxic and is being treated to render the waste non-hazardous. Some of the waste is being recycled or reduced through waste minimization programs. Finally, some of the diverted waste is being shipped to other states with less stringent requirements.

State interface with federal ban. . . .

Essentially, the hazardous wastes proposed by the U. S. Environmental Protection Agency for restriction under the federal land disposal ban are already subject to Illinois landfill disposal restrictions. As these restrictions are promulgated by U. S. EPA, the Pollution Control Board will adopt the regulations as state rules while keeping in place state requirements as appropriate.

The "California list" proposal as part of this rulemaking is not expected to significantly impact hazardous wastes managed in Illinois. The "California list" imposes restrictions on hazardous liquid wastes which are already prohibited from disposal in Illinois. The proposed requirement of a waste stream concentration test rather than a toxic constituent test, when adopted, would be included as an additional state measure that would supplement existing state criteria for disposal of hazardous liquids in accordance with the Illinois land disposal restrictions.

Is there enough capacity?

Treatment capacity for "banned" wastes has not been a issue in Illinois. From 1980-1985, statistics have shown a steady decline in the percentage of hazardous wastes disposed of in commercial off-site landfills in Illinois. Regulatory and economic incentatives have helped to expand treatment and recycling capacity in Illinois by allowing these facilities to better compete with landfill disposal facilities.

Furthermore, many land disposal authorization requests reviewed by the Illinois EPA are for treatment residues which no longer exhibit hazardous waste characteristics, as defined by EPA.

WC:mg/35

ILLINOIS LAND BAN EXPERIENCE

SENATE COMMITTEE ON ENVIRONMENT & PUBLIC WORKS

HAZARDOUS WASTE & TOXIC SUBSTANCES SUB-COMMITTEE

June 5, 1987

Testimony by William C. Child

In the first calendar quarter since its effective date it appears that IEPA implementation of the Illinois hazardous waste ban has been successful.

The waste volume is down significantly - 39% compared to the first quarter of 1986. The number of permits is about 50% of what it was a year ago. Perhaps most importantly the types of wastes now being accepted pose much less of a threat to the environment. Most of the waste streams are for listed wastes and are generally hazardous for heavy metals, but do not exhibit any hazardous E. P. Toxicity characteristics. To a large extent we feel these wastes are essentially free of organic constituents as well. However, since these wastes are "listed" they will always remain hazardous unless "delisted". Following is a more detailed analyses of the "ban" implementation.

Waste Volume Reduction

The volume of wastes going to commercial landfills has dropped about 39% compared to the first quarter of 1986. This figure represents waste streams which go directly to the landfill and are not residuals from commercial treatment or incineration facilities. In the first quarter of 1986, almost 52,000 yards of waste were land disposed at three commercial facilities. Waste volumes gradually increased during the year, and peaked during December 1986 - probably trying to come in "under the wire" and beat the deadline. During the last quarter of 1986, 85,000 yards were disposed, whereas during the first quarter of 1987, only 31,000 yards were dispose. Attachment "1" summarized the above graphic form.

Similar volume figures are not yet available for non-commercial on-site facilities. These facilities generally utilize lagoons (which were essentially unaffected by this program), land treatment, land disposal and underground injection control wells. These facilities generally demonstrated that it was not presently economically reasonable or technically feasible to recycle, treat, or incinerate their wastes. However, one UIC well operator is installing a treatment facility which will render his waste non-hazardous. Construction will be completed in 1988.

What has happened to waste streams which no longer are being disposed as a hazardous waste? Much of the waste which was only characteristically hazardous is now being treated to render it non-hazardous. We suspect a lot of this is being done by improved treatment operations at the site of generation. According to permit applications some is being recycled or reduced through waste minimization techniques. Wastes are also being diverted to commercial treatment and recycling facilities. And finally, we suspect some waste is being diverted to other states with less stringent requirements.

ANALYSES BY WASTE CATEGORY AND TYPE OF INDUSTRY

1. Solvent Wastes - F001 - F005

These wastes are covered by federal land disposal restrictions as well as the Illinois ban. These restrictions, as well as the Illinois liquids and solvent bans, have almost eliminated land disposal of "F" listed solvents. There have been only four permits issued (as of 3/30/87) for "F-listed" wastes, and these have been for contaminated soil resulting from cleanups or closure activities. A year ago there were 34 permits for these types of wastes. Since solvents are frequently more reactive with synthetic liners, and are more permeable than heavy metals in soils, this reduction will have a very positive impact on protecting the integrity of land disposal units.

II. Electroplating and Metal Finishing Wastes - F006 - F019

The number of these waste streams has remained relatively constant as shown in Attachment "2" (267 permits before the ban versus 236 permits after the ban). However, an analyses of individual wastes stream applications reveals that many plating wastes generally don't exhibit hazardous characteristics (i.e. E.P. Toxicity), have been signficantly reduced in volume over the past several years (through recycling, and process changes), and are not contaminated with "F-listed" solvents. It appears that a complimentary relationship has developed over the past few years between the pretreatment regulations promulgated under the Clean Water Act, and the Solid Waste

Regulations. The pretreatment rules have limited the mass of waste water discharges (which has resulted in more treatment and recycling, and less volume), and toxic organics (which has minimized discharges of many degreasing solvents).

In general, the electroplating/metal finishing industry has proved that it was not technically feasible to further treat their wastes.

III. Other Listed Wastes - (K-List, U-List, and P-List)

The other types of listed wastes come from the iron and steel industry (18 permits), the petroleum refining industry (16 permits), several miscellaneous industry types, and commercial treatment (including incineration) facility residues which are not attributable to any particular industry. Permit summaries are shown in Attachment "2". The wastes from the steel industry are generally from electric arc furnaces. Because they demonstrated they could not effectively treat their wastes to render them less hazardous, or effectively unchanged. The steel companies in Illinois have ongoing studies to further evaluate arc furnace dust recycling and/or treatment. Significant permit reductions have been noted in the group of miscellaneous industry types.

IV. Characteristically Hazardous Waste

These are wastes which are not listed for any reason, but rather only exhibit some characteristic such as corrosivity, ignitability, reactivity, or E.P. Toxicity. As shown in Attachment "3" the number of permits issued, and we suspect the volume of waste disposed, has been reduced dramatically.

The amount of permits has been reduced by over 70%. One reason for this reduction is that unlike "listed" waste, characteristic waste can be treated and rendered non-hazardous. Since many of thes waste streams are residuals from exempted waste water treatment systems, RCRA Part B Permits are not needed. Other wastes are going to commercial treatment facilities.

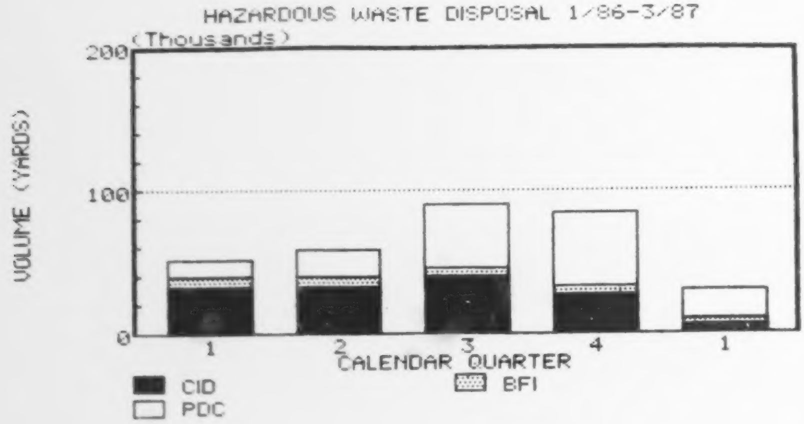
DISPOSAL ALTERNATIVE CAPACITY

While preparing to implement the Illinois Ban a lot of comments from industry concerned the availability of commercial treatment, incineration, and recycling facilities. So far it does not appear as though this has been a factor. Over the past several years IEPA policies have been geared towards promoting, aiding, and assisting in the development of many alternative facilities. This trend continues as one incinerator proposes expansion, three new treatment facilities have, or will be submitting Part B applications, and one hazardous waste biological treatment system is under construction.

WCC:mg/36

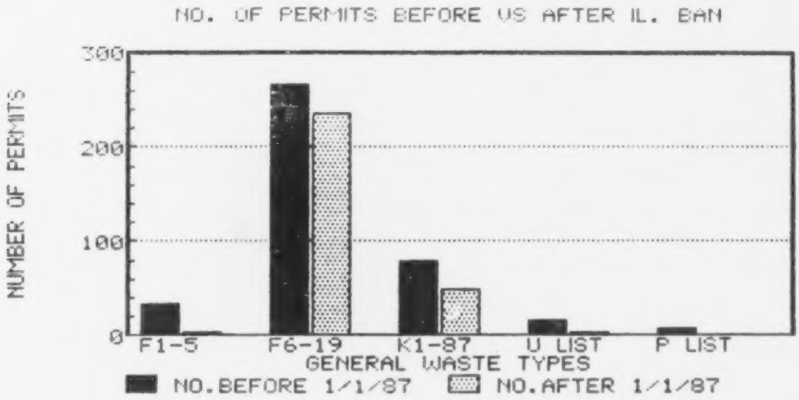
ATTACHMENT 1

X Data	CID	BFI	PDC
1/86	33102	7405	11240
2/86	33426	7612	18887
3/86	40764	6253	44086
4/86	27151	6656	51292
1/87	6118	4932	20149



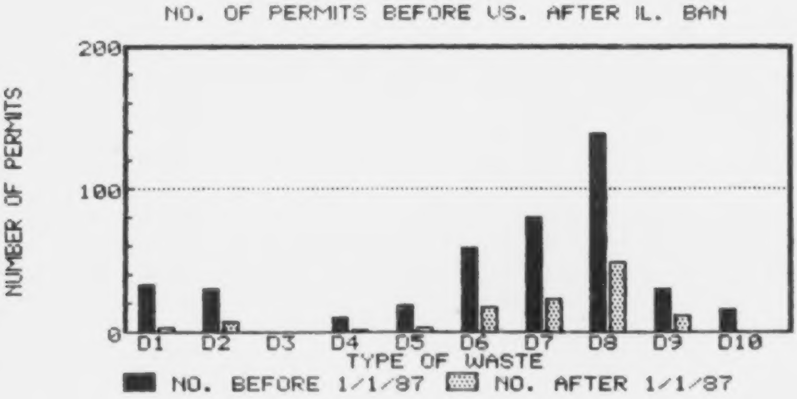
ATTACHMENT 2

X Data	NO.BEFORE 1/1/87	NO.AFTER 1/1/87
F1-5 (SOLVENTS)	34	4
F6-19 (PLATING)	267	236
K1-87 (OTHER)	79	49
U LIST	17	4
P LIST	7	0



ATTACHMENT 3

X Data	NO. BEFORE 1/1/87	NO. AFTER 1/1/87
D1	33	4
D2	31	8
D3	0	0
D4	11	2
D5	19	3
D6	59	18
D7	81	24
D8	139	49
D9	30	12
D10-19	17	0



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TESTIMONY OF A. BLAKEMAN EARLY
WASHINGTON REPRESENTATIVE, SIERRA CLUB
BEFORE THE
SENATE SUBCOMMITTEE
ON HAZARDOUS WASTES AND TOXIC SUBSTANCES
COMMITTEE ON ENVIRONMENT AND PUBLIC WORKS

June 5, 1987

"When we try to pick out anything by itself, we find it hitched to everything else in the universe." *John Muir*

Good morning, my name is A. Blakeman Early. I am a Washington Representative of the Sierra Club. The Sierra Club, with a national membership of more than 400,000, has been very active for nearly two decades on national legislation to protect public health and the environment from toxic pollution. The Club was very supportive of the passage of the Resource Conservation and Recovery Act in 1976 and the Hazardous and Solid Waste Amendments in 1984.

INTRODUCTION

I believe it is very important to put consideration of EPA's implementation of the land disposal restrictions in perspective. It has been generally accepted for about a decade that burying toxic wastes in the ground is a thoroughly bad idea. Most experts agree that building the perfect bathtub to hold hazardous industrial wastes without leaking has never been successfully accomplished. Through the implementation of Superfund, we are learning that yesterday's burial sites are today's Superfund sites. And, unfortunately, today's burial sites are likely to be tomorrow's Superfund sites. Hence, the Superfund has grown from $1.6 billion to $8.5 billion.

Notwithstanding this fundamental fact, EPA has pursued a policy in the implementation of the Resource Conservation and Recovery Act (RCRA) which can best be characterized as the "you can bury it--just bury it better than you used to" policy. Congress in 1984 very clearly laid out a policy shift that was designed to discourage land disposal in favor of source reduction, recycling, and incineration. Wastes that were to be land disposed were to be treated in order to immobilize or detoxify them. The land disposal restrictions are the linchpin of this new policy. There is little doubt that the provision requiring EPA to determine which wastes were not suitable for land disposal was intended to drive waste generators to seek more health protective alternatives, recognizing that they would not do so voluntarily because of the increased cost and the inconvenience of abandoning the status quo. Looked at in the context that I have just described, EPA's proposals of December 11 are stark violations of both the spirit and the letter of the law. I believe they represent the apex of bureaucratic razzle-dazzle which have expended valuable EPA resources, while completely flouting the will and intent of Congress. The fact is that this proposal can best be described as the land disposal "unrestrictions." The result will be an unfortunate deferral of the time when untreated hazardous wastes are no longer land disposed.

THE EPA LAND DISPOSAL RESTRICTIONS ARE ILLEGAL

While the EPA purports to be adopting the statutory levels as maximum allowable concentrations of the listed toxics in the waste to be land disposed, its method of identifying such wastes through measuring the leachates of these wastes as they emerge at the bottom of the site has the practical effect of raising the allowable concentrations of hazardous constituents in the waste that can go into a site by many orders of magnitude. The statute clearly intends the restriction to apply to hazardous constituents in the waste stream prior to leaching dilution and attenuation. According to analyses submitted by the Hazardous Waste Treatment Council, California list wastes would have to contain more than 240,000 ppm or 24% leachable chromium, 180,000 ppm leachable lead or from 20,000 to 50,000 ppm total cyanide in order to fail the TCLP and be ineligible for land disposal under the proposed rule. This is clearly not what the law requires. The 1984 amendments restrict the amount of chromium and lead to 500 mg/l and cyanides at 1,000 mg/l. The impact of the proposed land disposal restriction for most of the California list wastes would be so negligible that it is not clear that any wastes are being generated and land disposed that contain such high concentrations of these toxics.

But, of course, just in case there are such wastes, EPA has provided a two-year across-the-board waiver from the application of the restrictions on halogenated organic chemical and PCB wastes. Subsection 3004(h)(2) provides that the variance is supposed to extend to a date which is "...the earliest date on which adequate alternative treatment recovery or disposal capacity...will be available." It is clear that EPA has ignored this directive by failing to carefully consider the availability of treatment capacity for PCB and halogenated organic wastes. The tragedy is that, the longer the Agency defers identifying acceptable treatment technologies, the longer industry will defer making the necessary investment in such technologies such that adequate treatment capacity will be available.

Finally, the EPA has proposed a variance which ignores the mandate that all wastes for which variances are granted be disposed of only in land disposal facilities that meet the mininum technology requirements: i.e., the use of double liners, a leachate collection system and groundwater monitoring system. Clearly, Congress intended that if variances had to be granted, they should only allow continued disposal of California list wastes in the most protective land disposal units. EPA has totally ignored this directive. The irony is, EPA's excuse for not lowering the statutorily set concentration levels to which the land disposal restrictions would apply to the EPA toxicity levels (100 times drinking water standards) is that disposal of these wastes in a hazardous waste land disposal unit provides a greater level of protection than that provided by disposal in a municipal landfill. If the hazardous waste land disposal unit is not required to meet minimum technology requirements, this assumption is totally erroneous.

EPA IS ALSO IGNORING CONGRESS' INTENT

The Congress has clearly laid the basic groundrules for allowing continued land disposal of hazardous wastes. As stated in subsection 3004(d)(1), "A method of land disposal may not be determined to be protective of human health and the environment unless...it has been demonstrated that there will be no migration of hazardous constituents from the disposal unit....for as long as the wastes remain hazardous." The testimony of both the Natural Resources Defense Council and the Hazardous Waste Treatment Council outline effectively the congressional intent that the statutory concentrations operate as a starting point and EPA should lower them. As the testimony from NRDC clearly shows, the leachate from the California list metals when tested exceeds the drinking water standards by 1,700 times at the point of exposure using EPA's own model. The Sierra Club believes that concentrations of toxic metals even at drinking water levels in the leachate escaping the unit would not meet the requirements of the statute. It goes without saying that the EPA has an absolute obligation to lower the concentrations of California list metals allowed to be land disposed if the leachate concentrations are 1700 times the drinking water standards when they reach a drinking water source. Obviously, this level of hazardous constituent does not meet the "no migration" groundrule established by Congress.

The Agency has chosen to ignore Congress' intent. It contends that the concentrating levels can be lowered only when the Administrator finds "sufficient evidence to show there is a substantial threat to humans and the environment." This issue is not substantially different from that addressed by this Committee a little more than a year ago in response to EPA's proposed "decision rule" regarding methods for identifying acceptable levels of treatment prior to land disposal. In a March 4, 1986 letter to Lee Thomas signed by many members of this

Committee, it was stated "...the intent of the HSWA provision on land disposal prohibition is to require treatment prior to land disposal unless it can be proven that untreated hazardous wstes or constituents will not migrate from a particular disposal unit." The letter further states, "Inclusion of a 'no migration' standard was intended to eliminate land disposal practices that present any threat." We believe that this interpretation is just as applicable under the circumstances of this proposal as it was under the previous one. EPA's job is in fact to determine that land disposal of the California list wastes at the statutory concentrations with no treatment will not pose any threat, not that such disposal will not pose a substantial threat.

The RCRA extends a promise to the American people that hazardous waste will no longer be generated and handled in a manner that threatens public health and our environment. The Sierra Club commends the Committee for reviewing this latest EPA proposal. We believe that continued close congressional oversight of the Agency's implementation of RCRA is essential to ensure this legislation delivers the RCRA promise.

Thank you for providing this opportunity to testify.

CMA

CHEMICAL MANUFACTURERS ASSOCIATION

STATEMENT OF

DAVID C. CANNON JR.

ON BEHALF OF

THE CHEMICAL MANUFACTURERS ASSOCIATION

BEFORE THE

HAZARDOUS WASTES AND TOXIC SUBSTANCES

SUBCOMMITTEE

OF THE

COMMITTEE ON ENVIRONMENT AND PUBLIC WORKS

OF THE

UNITED STATES SENATE

OVERSIGHT HEARING ON

LAND DISPOSAL ISSUES

JUNE 5, 1987

2501 M Street, NW • Washington, DC 20037 • Telephone 202/887-1100 • Telex 89617 (CMA WSH)

WRITTEN TESTIMONY OF
DAVID C. CANNON JR.
ON BEHALF OF THE
CHEMICAL MANUFACTURERS ASSOCIATION
FOR
HAZARDOUS WASTE AND TOXIC SUBSTANCES SUBCOMMITTEE
OVERSIGHT HEARING ON
LAND DISPOSAL RESTRICTIONS
JUNE 5, 1987

My name is David Cannon. I am an attorney with PPG Industries and serve as the leader of the RCRA Regulations Task Group of the Chemical Manufacturers Association (CMA). CMA is a non-profit trade association whose member companies represent over 90 percent of the productive capacity of industrial chemicals in the United States.

You have asked us to discuss how the land disposal restriction program is working. At the outset, CMA wishes to make it clear that the specific impacts of the California List proposal are currently uncertain and unquantified. CMA member companies do have discrete waste streams which will be subject to the California List restrictions, although the waste streams containing metal constituents are generally not prevalent in our industry. But, particularly while the rule is pending, a precise assessment of the impact is difficult to formulate. To the extent that CMA has data on capacity and waste streams relating to this proposal, it included them in its comments on the California List proposal which we have given to Subcommittee staff.

The impact of the land disposal program, is also uncertain because there is only one final rule covering a relatively narrow group of wastes -- those containing listed spent-solvents and dioxins. This rule was finalized only seven months ago in November, 1986. CMA is unaware of major compliance or dislocation problems associated with this regulation. This is the case for non-wastewater solvent and dioxin wastes because the chemical industry has, over the past several years, removed these wastes from land disposal and is managing these wastes by recycle or incineration.

Although the actual impact of Congress's restrictions on land disposal is still unquantified, CMA does have data in the industry's most recent waste survey. This shows a decrease of 58% in hazardous waste landfilled over a five-year period. This is a 1981-1985 trend and presumably results from three factors: 1) the rapidly increasing cost of land disposal; 2) CERCLA liability and RCRA corrective action; and 3) changing waste management in anticipation of the Agency's implementation of the 1984 land disposal restriction provisions.

Moreover, the 1984 amendments to RCRA are having a major impact on the chemical industry's waste management programs. Examples are:

1. Greater efforts are being made to minimize the generation of wastes because land disposal is or will be restricted and prohibitively expensive.

2. Greater use of recycle is also occurring.

3. Increased treatment of all hazardous waste is occurring with a particular emphasis on wastes restricted from land disposal.

4. The chemical industry is constructing and planning new incinerators in anticipation of imminent and future land disposal restrictions. For example, PPG is constructing an incinerator at its plant in Lake Charles, Louisiana that will incinerate a major California list waste stream historically disposed of in a permitted hazardous waste landfill.

5. Hazardous waste surface impoundments are being or will be largely phased out and replaced by tanks.

6. CMA member companies are also conducting research into alternative treatment methods for specific hazardous waste streams.

Although CMA does not have more specific information on impacts of the California list proposal, the land disposal restriction rulemakings do raise several policy and interpretation issues which we will discuss since they will affect EPA's future administration of the program and the chemical industry's ability to comply with the restrictions.

BEST DEMONSTRATED AVAILABLE TECHNOLOGY (BDAT)

The most fundamental principle under RCRA is that EPA has the authority and discretion to determine what is and is not hazardous. In exercising this authority, EPA defines the constituent concentrations that might threaten health and the environment. The land disposal restriction program, however, often requires treatment to constituent concentrations far below those concentrations believed to threaten the environment.

EPA's program requires treatment of a waste prior to land disposal to constituent concentration levels that are technology driven -- to the lowest level that best demonstrated available technology (BDAT) will achieve. These BDAT levels may often be orders of magnitude lower than a concentration level that would be deemed "hazardous" in the first place. Consequently, the program leads to a huge waste of resources for unnecessary treatment.

For illustration, EPA recently proposed an organic toxicity characteristic (OTC) which defines the concentration that will cause a waste containing certain organic constituents to be considered a hazardous waste. In addition, the Agency has developed a delisting document that contains concentrations at which it will delist a waste containing organic constituents. The final BDAT levels for spent-solvent wastes in the land disposal rule generally require treatment to much lower levels than these OTC and delisting levels, even though EPA considers the OTC and delisting levels to be protective of human health and the environment.

The chart at the end of our statement demonstrates this point by comparing final spent-solvent BDAT levels with the Agency's proposed OTC levels and CMA-generated numbers based on the Office of Solid Waste's concentrations for delisting wastes containing the relevant organic constituents. The delisting numbers have been adjusted by CMA pursuant to EPA models and assumptions. As an example, the BDAT levels for a waste containing spent methyl ethyl ketone is .05 mg/l (wastewater) and .75 mg/l (non-wastewater), whereas the proposed OTC level for waste containing methyl ethyl ketone is 7.26 mg/l and the "delisting level" is 16.32 mg/l. There is no reason to treat a waste to 320 times the level at which the Agency would delist the waste.

These contrasting figures show that the stringent BDAT levels are unwarranted, create inconsistencies within EPA's own programs, and lead to wasteful use of treatment resources. The BDAT levels are not always necessary to protect human health and the environment. While CMA does not object to using available and practicable technologies which may treat to below concentrations that are protective of human health and the environment (e.g., incineration for concentrated solvents), we believe that BDAT should not require use of a single technology which produces the lowest concentration level when other technologies will also achieve levels that are protective.

In Section 3004(m) of RCRA, Congress directed EPA to set treatment levels which "substantially diminish the toxicity of the waste". Substantially diminishing toxicity should not mean treatment of the waste to well below the level at which the waste is considered hazardous.

Although one ostensible alternative is a delisting of a waste pursuant to established EPA procedures, this approach has proven historically unworkable. Delisting petitions have taken years to process, and many which were submitted years ago are still pending at EPA. In the interim, the waste must be treated to BDAT before it can be land disposed.

CMA has encouraged EPA to streamline its delisting process. However, the most immediate solution is not to require treatment below levels at which the waste would be hazardous or be delisted. CMA's approach would lead to treatment when justified, not unwarranted treatment for treatment's sake.

WASTEWATER

One of the major problems with RCRA is it over-regulation of wastewaters that are generated from and integral to manufacturing processes. These wastewaters typically contain very low levels of hazardous constituents. The large quantities of dilute wastewaters often result from small amounts of listed hazardous waste unavoidably mixing with huge volumes of non-hazardous wastewaters, causing the entire mixture to be considered a hazardous waste under EPA's "mixture rule". 40 C.F.R. 261.3(a)(2)(iv).

Much of this wastewater is currently managed in extensive wastewater collection systems and treatment facilities that comply with Sections 307(b) or 402 of the Clean Water Act. These systems collect numerous individual streams from various manufacturing processes. The wastewaters in these systems are often stored and treated in land disposal units -- typically surface impoundments wherein biological treatment effectively reduce constituent concentrations.

The land disposal restrictions would not allow these dilute wastewaters to be placed in land disposal units (surface impoundments) for treatment to meet Clean Water Act discharge levels. Rather these impoundments designed to comply with the Clean Water Act would have to be replaced by numerous, massive tanks. This requirement to replace wastewater impoundments with tanks will be by far the largest drain on resources and place the greatest stress on capacity since, as indicated by CMA's survey, over 98 percent of all hazardous waste generated by the chemical industry is wastewater.

Congress has authorized EPA to determine that the regulation of specific methods of land disposal may not be necessary to protect health and the environment, (e.g., RCRA §3004(e)(1)). In a recent organic toxicity characteristic supplemental notice of proposed rulemaking, 52 Fed. Reg. 18583 (May 18, 1987), EPA suggested that a different approach might be appropriate for determining whether a wastewater is hazardous by virtue of the organic toxicity characteristic. CMA applauds this suggestion, but submits that this difference must also be recognized in the land disposal restriction rules.

A new approach for dilute wastewaters must be devised. The new approach must recognize that the wastewater impoundments and biological treatment systems were constructed to meet effluent limitations established under permits under the Clean Water Act. The current land disposal restriction rules would require that these impoundments be replaced with unnecessary and expensive tank systems. Tank systems would have to replace impoundments even though impoundments often provide better treatment depending on the retention time and nature of the hazardous constituents. A new approach to regulating wastewater is essential not only to relieve the tremendous burden dilute wastewater will place on industry to construct alternate treatment capacity, but also so that regulatory requirements governing wastewater are commensurate with its unique nature and minimal risks.

NATIONWIDE CAPACITY VARIANCE

Under the statute, EPA may grant a nationwide variance from a restriction date of up to two years if it determines that there is inadequate nationwide capacity. In the California List proposal EPA has interpreted this as requiring that EPA identify BDAT for a waste, and determine when such BDAT capacity will be available before it can provide a nationwide variance.

Thus, CMA's third issue stems from EPA's assertion that it does not have enough data to establish BDAT treatment levels in the California List proposal for hazardous waste containing cyanides, metals or halogenated organic compounds between 1000 and 10,000 ppm. EPA says that since it cannot establish BDAT for these wastes, it does not know when BDAT will be available, and therefore cannot grant a nationwide variance or case-by-case extension to the land disposal prohibition for these wastes. CMA strongly disagrees with this interpretation. Indeed, the impacts of this interpretation extend well beyond the California List because EPA is likely to have similar difficulty establishing BDAT for many of the scheduled wastes it must address in the next three years.

First and foremost, if EPA cannot identify BDAT, it logically follows that BDAT is not available, and an extension of the effective date should automatically be granted.

Second, EPA is much too narrowly limiting its variance determination to the availability of BDAT treatment capacity. Section 3004(h)(2) says that EPA may grant a variance or case-by-case extension

> "on the basis of the earliest date on which adequate treatment, recovery, or disposal capacity which protects human health and the environment will be available." (emphasis added).

Thus, EPA should consider the availability of all treatment capacity (not just BDAT treatment), as well as the availability of recovery and disposal capacity.

For example, treatment other than BDAT may reduce the concentration levels of California list wastes below the restriction levels, may solidify restricted liquid wastes, or may render the waste non-hazardous. A lack of capacity of any of these treatment mechanisms therefore should be a basis for granting a nationwide variance or case-by-case extension, whether or not BDAT has been set. It is unacceptable for EPA not to establish BDAT and as a consequence refuse to consider granting a variance or extension.

CALIFORNIA LIST LEVELS

This issue relates to whether EPA should establish restriction levels for California List wastes that are lower than those initial concentration levels established in the statute. The levels in the statute were the product of extensive hearings in California where all interests, including environmentalists, had opportunity for input. Established administrative procedures require that EPA retain those levels unless there is convincing evidence in the rulemaking record that lower levels are necessary to protect health and the environment. If EPA receives such evidence as it continues to address these same constituents in the upcoming rules covering the "scheduled thirds" wastes, EPA could set lower restriction concentration levels after notice and comment. It is not enough to say lower levels could be technologically achieved, they must be necessary to protect human health and the environment.

It has been suggested that EPA lower the restriction levels in the final rule to the levels EPA uses to determine if a waste is hazardous by virtue of the EP toxicity characteristic. EPA should not do this because the California List levels are established on entirely different premises than the EP toxicity levels. EP levels are meant to judge whether a waste is hazardous. The levels are set relatively low because if a waste is not deemed hazardous it may be managed in a Subtitle D unit. In contrast, a waste containing California List constituents, if not restricted from land disposal, will still be managed in a Subtitle C facility which has groundwater monitoring, and financial assurances for closure, post-closure and corrective action. By November, 1988, these facilities will also have double-liners and leachate collection systems. Accordingly, the California List restriction levels should be higher than EPA toxicity levels since there are stringent, Subtitle C requirements for these wastes which preclude the need to ban their land disposal absent evidence that land disposal in a Subtitle C unit poses a threat to human health and the environment.

In addition, if EPA decided to change its current proposal in a materially more restrictive fashion (*e.g.*, establish BDAT for metals or reduce the restriction levels for metals), it would need to issue a notice of data availability as soon as possible and seek further comment. It would be patently unfair and raise questions under the Administrative Procedures Act to issue a materially more restrictive final rule just before the July 1987 "hammer" unless the regulated community is given notice of the newly proposed restrictions and an opportunity to comment on them. Moreover, the practical problems would be immense; for example, if a generator finds his waste is unexpectedly banned from land disposal when the final rule is published, he could not construct a BDAT treatment unit or a storage tank overnight, and therefore, would surely have to cease generation or be out of compliance.

LEACHATE TEST

A final question is what approach EPA should select for determining the concentration levels of California List wastes. First, EPA could analyze only the filtrate. Second, EPA could determine whether a sample contains free liquids and if so, obtain a test generated leachate which is analyzed with the initial liquid filtrate. Third, EPA could perform total constituent analysis on the entire waste sample.

We are aware that some argue that the Agency should use the approach of the state of California, asserting that this is the third approach -- total constituent analysis on the entire waste sample. The state of California, however, uses the first approach -- analyzing the filtrate. (See Comments by S. Kent Stoddard, Special Assistant to Speaker of the California Assembly, attached to Comments of the Hazardous Waste Treatment Council on the California List Proposed Rule.) Moreover, the second approach -- analyzing the filtrate and leachate -- is the most environmentally sound since the constituents that might threaten the environment could be found in both the filtrate and leachate. Finally, it is misleading and too simplistic to assert, as some have, that, because the leachate test involves a 20 to 1 dilution factor, analyzing the filtrate and leachate will weaken the California List restrictions. Indeed, in many cases the constituents will be abundant in the leachate and they will be leached using an aggressive acid leaching medium required by the leach test. In these cases, the California List restrictions will be made more stringent by analyzing the filtrate and leachate.

The statute would support the first approach of analyzing only the filtrate since Section 3004(d) refers (except for HOCs) only to restrictions on "liquid hazardous waste, including free liquids associated with any solid or sludge. . ." Further, this is the approach the state of California adopted in its land disposal program which Congress used as a basis for HSWA's land disposal restriction program.

The statute would also allow EPA's second approach of first determining whether a waste contains free liquids, (using the paint filter test) and if it does, obtaining a test generated leachate which is then analyzed with the initial liquid filtrate. By this approach, in effect, EPA applies its regulatory test to determine the presence or absence of free liquids. If a material has free liquids by this test, EPA defines the entire waste as a liquid.

This second approach of using a leachate is also environmentally sound. The objective of the land disposal ban is to protect groundwater from hazardous constituents in hazardous waste which can result either from free liquid or leachate. Since the Toxicity Characteristic Leaching Procedure (TCLP) was developed to produce standardized leachate, it would seem most reasonable, when technically feasible, to obtain a leachate for analysis regarding the land disposal restriction and BDAT treatment levels.

Regarding the third approach of analyzing for total constituents in the waste sample, CMA believes there is neither a compelling statutory nor environmental basis for this approach. No suggestion is made in the statute or its legislative history that Congress was concerned about the constituents that are entrapped in the solid matrix. Section 3004(d) was based on California land disposal restrictions. Since California does not require a total constituent analysis for wastes containing California constituents, it is appropriate for EPA similarly not to require total constituent analysis.

Nor would non-mobile constituents (i.e., those that do not leach out) pose an environmental threat. A total analysis would measure metals which are bound as insoluble compounds. Insoluble compounds are not available to be leached to the groundwater or to volatilize and therefore pose no environmental threat. In fact, forming insoluble compounds is the accepted method of treatment for many of the metals. Requiring total constituent analysis could result in EPA's eliminating the only available treatment methods for large quantities of metal bearing wastes, rendering them unacceptable for land disposal.

In sum, CMA does not object to the second option to analyze the leachate and filtrate.

Thank you for considering CMA's views.

COMPARISON OF BDAT, PROPOSED OTC, and DELISTING LEVELS

	BDAT for Wastewaters Containing Spent Solvents mg/L */	BDAT for All Other Spent Solvent Wastes mg/L */	Proposed OTC Levels mg/L **/	Delisting -- Maximum Acceptable Concentration Levels Using Most Conservative VHS Assumption of Unit Size mg/L ***/
Acetone	0.05	0.59		25.79555
n-Butyl alcohol	5.0	5.0		
Carbon disulfide	1.05	4.81	14.4	524.09
Carbon tetrachloride	.05	.96	0.07	.000918
Chlorobenzene	.15	.05	1.4	260.64
Cresols (and cresylic acid)	2.82	.7	10.0	53.736
Cyclohexanone	.125	.75		
1,2-dichlorobenzene	.65	.125	4.3	2,953.5775
Ethyl acetate	.05	.75		
Ethyl benzene	.05	.053		2,676.06
Ethyl ether	.05	.75		163,120.9
Isobutanol	5.0	5.0	36.0	473.926
Methanol	.25	.75		
Methylene chloride	.20	.96	8.6	412.396
Methylene chloride (from the pharmaceutical industry)	12.7	.96	8.6	412.396
Methyl ethyl ketone	0.05	0.75	7.26	16.3264
Methyl isobutyl ketone	0.05	0.33		87.3735
Nitrobenzene	0.66	0.125	0.13	279.9
Pyridine	1.12	0.33	5.0	.06595
Tetrachloroethylene	0.079	0.05	0.1	.000921
Toluene	1.12	0.33	14.4	6770.4
1,1,1-Trichloroethane	1.05	0.41	30.0	156.67095
1,2,2-Trichloro-1,2,2-trifluroethane	1.05	0.96		
Trichlorethylene	0.062	0.091	0.07	.00296
Trichlorofluoromethane	0.05	0.96		4553.22
Xylene	0.05	0.15		

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*/ Source: Land Disposal Restriction Final Rule, 51 Fed. Reg. 40572, 40642 (Nov. 7, 1986).

**/ Source: Organic Toxicity Characteristic Proposed Rule, 51 Fed. Reg. 21648, 21685 (June 13, 1986).

***/ Source: "Regulatory Standards, Solubilities, and Maximum Acceptable Concentration For Constituents of Concern In Delisting Petitions" (undated), (obtained on January 20, 1987 from Office of Solid Waste, State Programs and Permits Division, Variance Section (formerly "Petition Delisting Section"). The numbers appearing in this column of the chart have been divided by a factor of 20 to represent the "predicted TCLP concentrations." Division by this TCLP dilution factor is necessary to allow proper comparison with BDAT and OTC levels which are also based on TCLP extracts of the waste.

Statement
on
Behalf of the
American Petroleum Institute
Before the
Subcommittee on Hazardous Wastes and Toxic Substances
# of the
Senate Environment and Public Works Committee

June 5, 1987

The American Petroleum Institute (API) welcomes this opportunity to reaffirm its strong and continuing support for appropriate management of hazardous wastes and to offer comments concerning implementation of the RCRA land disposal restrictions program, as requested by the subcommittee. API represents more than 200 corporate and 5,000 individual members engaged in various aspects of oil and gas operations throughout the U.S. Although these operations involve numerous waste recovery, recycle, and treatment technologies, some residuals requiring disposal remain, as is the case in most biological, household and industrial processes. Development of responsible management techniques for handling such wastes, considering the relative risks associated with the specific wastes and site situations, will be essential.

In response to your request for input relative to implementation of the land disposal restrictions program, the following issues are addressed herein: the land disposal ban framework and EPA's use of the toxicity characteristic leaching procedure or TCLP, the "California List" wastes, and land treatment of petroleum industry wastes. In summary, API supports a flexible land disposal ban framework which appropriately considers site specificity, promulgation of the California list wastes at the statutory levels, and specific recognition of the unique "treatment" aspects of land treatment. Indeed this technology, which reduces waste toxicity and minimizes migration of waste constituents, should be encouraged rather than included with less-effective methodologies in the land disposal restrictions program.

LAND DISPOSAL BAN

API believes that much of the concern about land disposal has originated from environmental damage caused by improperly operated landfills or other indiscriminate dumping of hazardous wastes on land. Clearly the Congress has recognized and reacted accordingly to these concerns in its strong action in enacting the 1984 RCRA amendments, which emphasize land disposal as the least-favored option for management of hazardous wastes. In the case of many petroleum industry wastes, a technology referred to as land treatment provides significant toxicity reduction and substantially reduces the potential migration of hazardous constituents. Yet because the statutory definition in RCRA includes land treatment as a form of land disposal, EPA is addressing this technology in the same manner as landfills and surface impoundments, which are totally different and do not provide similar treatment advantages.

In terms of an overall approach to the land disposal prohibitions, API believes that EPA's January 14, 1986 proposal

(51 Fed. Reg. 1602) satisfied both the letter and the spirit of the 1984 amendments to Section 3004 (b-m). Those amendments essentially require banning land disposal of all hazardous wastes by specified dates, unless (1) a demonstration is made through the petition process that no hazardous constituents which threaten human health and the environment will migrate from the disposal unit, or (2) the constituents have been treated to substantially reduce their toxicity or mobility, and minimize threats to human health and the environment.

The January, 1986 EPA proposal sought to establish an effective generic mechanism for identifying concentrations at which individual wastes could be safely land disposed. These concentrations, or "screening levels," would represent the basis for treatment standards (i.e. wastes would have to be treated to attain these levels, and wastes achieving the levels without treatment would not be required to undergo "treatment for treatment's sake") and would provide a mechanism for excluding wastes from the detailed petition or treatment review process if they have been demonstrated not to be a threat to human health and the environment. The proposed screening approach focused on the minimization of risk to public health and EPA's policy of making risk reduction the integrating concept for Agency management and decision-making (see "Risk Assessment and Risk Management: Framework for Decision Making," EPA 600/9-85-002, December 1984).

However, as a result of criticism from some members of Congress EPA modified its original screening proposal to a "technology-based" approach. Under the first land disposal ban rulemaking dealing with solvents and dioxins (51 Fed. Reg. 40593), specific treatment levels were established for appropriate constituents based on best demonstrated available technology (BDAT). These performance standards must be met by the owner/operator if the waste is to be disposed of on the land. EPA suggests that these standards offer the regulated community flexibility to develop and implement compliance strategies, provide an incentive to develop innovative treatment technologies, and ensure that such technologies are operated properly. API, however, believes that the original screening level approach offered more flexibility than the final technology-driven framework, and is particularly concerned that BDAT levels may be established at unreasonably low levels.

The schedule established by EPA for the banning of untreated hazardous wastes includes five listed wastes generated by the petroleum refining industry: API separator sludges, DAF float, slop oil emulsion solids, heat exchanger bundle cleaning sludges, and leaded tank bottoms. These wastes, which are generally a mixture of oil, water, and solids, will be evaluated in the first third timeframe of the scheduled wastes, primarily due to their volume rather than toxicity. The most environmentally sound method for handling these wastes is land treatment, yet because of the statutory definition, EPA could prohibit or restrict this technology as early as August 1988.

In conjunction with the schedule for implementing the land disposal prohibitions, Congress directed EPA to identify and correct the deficiencies in the extraction procedure (EP) toxicity characteristic to make it a more "accurate" predictor of the leaching potential of wastes. One of the deficiencies mentioned by Congress, was the EP's inability to properly evaluate wastes containing organic constituents. In response, the Agency has proposed to replace the EP with a new toxicity characteristic leaching procedure (TCLP), to be used to characterize solid wastes as hazardous whether they contain organic or inorganic constituents (51 Fed. Reg. 21648). API commented extensively on both the analytical procedure associated with the test and the assumptions relative to the regulatory threshold levels for each constituent. API questioned the Agency's use of a worst-case, co-disposal scenario since a large percentage of oily wastes generated in the petroleum industry are disposed of on-site and are not sent to municipal landfills. Moreover, many of these wastes when subject to the TCLP, yield two liquid phases, a non-aqueous "oily" phase and an aqueous phase. These liquids differ substantially in their physical properties, but under the proposed TCLP they are assumed to behave identically. In light of the conceptual shortcomings and the basic intent of the new TCLP (i.e. for definition of hazardous wastes), API also recommended that the procedure not be used in other aspects of EPA regulatory programs.[1]

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[1] It should be noted, that EPA has recognized some of the shortcomings of the TCLP and is now re-examining its validity for wastewaters managed in surface impoundments (52 Fed. Reg. 18583).

"CALIFORNIA LIST"

In response to the statutory time frames for implementation of the land disposal prohibitions, EPA proposed the "California List" wastes in December 1986. In its comments, API strongly supported the Agency's overall approach to codifying the statutory levels for the California list wastes.

The California list wastes were adopted in the 1984 RCRA amendments based on a similar provision in the State of California. The legislative history notes that generators, treaters, and disposal facilities as well as environmental groups and state agencies participated in development of the specified levels of constituents. Those constituent levels were adopted by Congress in the RCRA amendments as a starting point for dealing with prohibitions on land disposal.

API does not believe that additional evidence exists to justify lowering the "list" levels to protect human health and the environment. The Regulatory Impact Analysis associated with the rulemaking also supports this position.

API further believes that the California list statutory language focuses on liquids only. The paint filter test (which is also the test used in California) is the appropriate analytical tool for this determination. Use of the TCLP may result in over and/or under predicting concentrations of metals in the liquid extract due to the acidic medium specified in performing the test.

At the statutory levels for the California list constituents, EPA estimates that approximately 330 million gallons of waste presently generated per year will require treatment at a cost of $77 million. Lowering the metal constituents to the EP toxicity levels (as suggested by some) will substantially increase treatment volumes and costs, and have the potential to force many wastes now in the first and second third timeframes into the California list schedule. This increased volume at an earlier date than planned would exacerbate disposal capacity problems in a number of areas of the country.

LAND TREATMENT

In evaluating the status of the land disposal restrictions program, a major concern of the petroleum industry relates to the future of land treatment. Land treatment is a managed technology that involves the controlled application of waste on the soil surface and the incorporation of this waste into the upper soil zone. It differs significantly from landfilling, waste piles, and surface impoundments which store wastes in man-made or natural devices and use a combination of liners and leachate collection systems to control migration. Land treatment relies on the dynamic physical, chemical and biological processes occurring in the soil to degrade, immobilize or transform the waste to an environmentally acceptable form.

Land treatment technology has been used successfully for the treatment and disposal of: (a) petroleum industry wastes, (b) other industrial wastes such as from the wood preserving, pulp and paper, and food processing industries, and (c) municipal wastewater and sewage sludges. It also is used for treatment of contaminated soil and is a suitable closure process at specific sites.[2] When land treatment systems are designed and operated using proper procedures and methods, they have been shown to be protective of human health and the environment.

The petroleum industry presently generates and land treats approximately 850,000 tons of listed hazardous waste per year. Much of this waste was listed due to the concentration of two California list metals: chromium and lead. A reduction in the concentration of the California list constituents, specifically these metals, could bring these wastes within the scope of the California list wastes, resulting in an immediate prohibition of land treatment. Moreover, because of the lack of incineration capacity (the technology being primarily considered by EPA as BDAT for listed petroleum waste), these 850,000 tons may have to be chemically fixed and disposed of in Subtitle C landfills, assuming such treatment would be acceptable. This technique, however, could also increase the total volume for disposal of the wastes to approximately 2 million tons. API believes that it was not the intent of Congress to compromise the timing of the scheduled wastes by forcing wastes in the first third and second third of the schedule into an earlier timeframe.

Within the petroleum industry the design and operation of a land treatment facility is based on sound scientific and engineering principles as well as on extensive practical field experience. A typical site is designed and operated to: (a) maximize waste degradation and immobilization, (b) minimize release of dust and percolation of water soluble waste compounds, and (c) control surface water runoff. Furthermore, land treatment can also be a viable management practice for the treatment and disposal of non-hazardous wastes.

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[2] Land treatment (also referred to as in-situ bio-remediation) is being proposed for handling certain organic wastes in a number of Superfund sites. This provides onsite treatment and prevents the need for handling material off-site with the associated risks involved.

About 100 land treatment facilities treating petroleum industry wastes, primarily from refining operations, exist in the United States. In addition, 26 of 38 Canadian refineries and at least 10 refineries in Europe use land treatment as an environmentally sound, cost-effective waste management technology.

API supports the growing consensus that on-site treatment of hazardous waste is the preferred method of treatment (where feasible), and as such can help solve current landfill capacity problems, prevent releases during transport, and reduce future liability. A properly designed and well managed land treatment unit can be used to "clean-up" contaminated soil at both Superfund and RCRA sites, thereby alleviating the need to remove the soil for off-site custodial disposal.

At the present time, land treatment facilities are operating under RCRA interim status and have applied for permits according to the requirements under the RCRA Part 264 regulations. A major part of these regulations is the land treatment demonstration (LTD), which requires the applicant to show that the land treatment unit is effectively immobilizing and degrading the waste and that there is no migration of hazardous constituents to surface or groundwater. As noted by the Governor of Montana at the hearing held by this subcommittee on April 14, 1987, there are refineries in that state which are showing encouraging signs of completing successful land treatment demonstrations. It was also reported at that hearing that in EPA Region VIII, 70% of the RCRA land disposal permit applications that will probably qualify are for land treatment.

CONCLUSION

In conclusion, API supports the phased-in approach for banning land disposal of untreated hazardous wastes, and does not believe that EPA should be forced to reduce the levels of constituents in petroleum refinery wastes to an arbitrarily low level. Reduction of the statutory California list levels is not warranted in view of the Agency's acknowledgment that it lacks data to justify such action. Furthermore, specific consideration should be given to land treatment to recognize the unique nature of the treatment process and the inherent differences from other land disposal methods. We believe the statute allows an appropriate degree of latitude for EPA to take into account the treatment characteristics of land treatment and consider it in the BDAT determinations for petroleum wastes.

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TESTIMONY OF JANE L. BLOOM
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ON IMPLEMENTATION OF THE RCRA LAND BAN
BEFORE THE
HAZARDOUS WASTE AND TOXIC SUBSTANCES SUBCOMMITTEE
OF THE
SENATE COMMITTEE ON ENVIRONMENT AND PUBLIC WORKS

June 5, 1987

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I. Introduction

The Natural Resources Defense Council, Inc. (NRDC), a non-profit environmental organization with over 68,000 members and contributors nationwide, appreciates this opportunity to testify today before the Hazardous Waste and Toxic Substances Subcommittee. NRDC worked with Congress for passage of the 1984 amendments to the Resource Conservation and Recovery Act (RCRA). Since that time we have closely monitored EPA's implementation of the new law, especially the land ban and related provisions.

We are deeply concerned by what we see as a multi-pronged effort to subvert the underlying intent of the land ban mandated by §3004 of RCRA. The purpose of the ban was to drastically and expeditiously reduce reliance on land disposal of untreated hazardous wastes and to stimulate reduction, recycling and proper treatment of these wastes.

As explained below, however, in a series of recent rulemakings under §3004, EPA has demonstrated its determination to perpetrate the very land disposal practices that Congress sought to curtail. In the Nov. 7, 1986 final rule implementing the land ban for solvent and dioxin-containing wastes, EPA postponed the effective date of the ban for 2 years based on questionable data, and then proceeded to authorize disposal in substandard landfills and surface impoundments until the ban takes effect. EPA continued this delaying tactic in its Dec. 11, 1986 proposed ban rule for the California List wastes, and further unraveled the ban by limiting its coverage to wastes containing the extremely high statutory concentration levels of hazardous constituents on the California list. Promulgating these threshold concentrations in a final rule, as the Agency is expected to do shortly, could result in lethal levels of some hazardous constituents migrating into drinking water supplies. In addition, in its recently proposed rule establishing standards to control air emissions of volatile organic compounds (VOCs) from treatment facilities handling banned wastes, EPA has assured that for many solvent wastes and HOCs on the California list, hazardous constituents will merely be transferred from land to air, as a result of the land ban.

NRDC believes that collectively, these EPA actions will merely perpetrate for the foreseeable future land disposal of untreated hazardous wastes in facilities known to contaminate groundwater and air, and will undermine the Congressional objectives of waste minimization and proper waste management. They violate the spirit and letter of the Hazardous and Solid Waste Amendments to RCRA. Most of all, they subject the public and the environment to high risks.

The tide must be stemmed before it is too late. Unless Congress gives EPA guidance on proper implementation of the ban, it is extremely likely that the detrimental precedents established in the California List proposal and in the final rule for solvent and dioxin-containing wastes will reappear in subsequent ban rules. Indeed, Congressional guidance is needed now, as a proposed rule for hazardous wastes disposed of by deepwell injection is expected to be issued later this month, and a rule for the first third of the scheduled wastes is expected to be proposed by EPA in September.

The serious problems created by EPA's implementation of the land ban to date also point to the need for more direct measures than are currently mandated by RCRA to induce hazardous waste generators to reduce their wastes at the source. As a nation we simply cannot afford to continue to generate and manage a quarter of a billion tons or more of hazardous waste every year. In NRDC's view, the longer we wait to reduce this huge volume of waste, the more pressure there will be on EPA to write regulations that minimize costs and accept high risks in the disposal and management of these wastes. NRDC's observations on EPA's record to date in implementing the land ban, and our preliminary recommendations for a Federal program to stimulate waste reduction are presented in detail below.

II. EPA's Rule for Solvent and Dioxin-Containing Wastes Imposes a Two-Year Moratorium on the Land Ban for these Wastes.

EPA's Nov. 7, 1986 land ban rule restricting land disposal of untreated solvent and dioxin-containing hazardous wastes establishes fairly stringent treatment standards for these wastes. However, EPA has extended the ban's effective date for these standards and sanctioned continued land disposal of 99.5% of untreated solvent wastes and of all dioxin-containing wastes, for the next two years. EPA bases this two-year moratorium on the land ban on a badly-flawed analysis of available treatment capacity. This analysis was based on 1981 data, which are almost certainly out-of-date, because EPA did not even begin to collect relevant capacity data until the summer of 1986, almost two years after the 1984 RCRA amendments went into effect.

More important, EPA failed to collect excess capacity data for onsite treatment facilities, even though EPA estimates that 96% of all hazardous wastes are managed onsite.[1] The Agency's capacity analysis was therefore entirely based on the availability of offsite, commercial capacity for treating hazardous wastes. In other words, for lack of data, EPA made the questionable assumption that all relevant treatment facilities onsite were already being used to their maximum capacity so that the additional wastes requiring treatment would have to be sent offsite to a commercial treatment facility. This assumption has had far-reaching effects. Because commercial capacity fell 18% short of demand, EPA postponed the ban effective date for virtually all solvent-containing wastes (not just for those managed offsite) by two years. In doing so, EPA totally ignored its own recent data that showed that there are nine times more onsite facilities than commercial facilities with various wastewater treatment systems.[2] An analysis of the capacity at

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1. U.S. EPA, Office of Solid Waste, "National Survey of Hazardous Waste Generators and Treatment, Storage, and Disposal Facilities Regulated under RCRA in 1981" 146 (1984).

2. U.S. EPA, Office of Policy, Planning and Information, Office of Solid Waste, "1986 National Screening Survey of Hazardous Waste Treatment, Storage, Disposal and Recycling Facilities: Summary of Results for TSDR Facilities Active in 1985" Table 8 (December, 1986).

these onsite facilities could well have shown that the relatively small amount of predicted excess demand for commercial capacity could be met at onsite facilities.[3]

It is important to note that EPA has used virtually the same capacity analysis as the basis for proposing a two-year national capacity variance for those wastes on the California list for which the Agency has set BDAT. We are also concerned that this analysis will be used yet again in a forthcoming rule establishing prohibitions on deepwell injection of solvent, dioxin and California list wastes.

The flimsiness of EPA's capacity analysis illustrates vividly the Agency's strong intention to indefinitely postpone the land disposal prohibitions and maintain the status quo of land disposal of untreated wastes. EPA has turned RCRA on its head by extending the land ban effective date by two years for solvent wastes based on lack of data that demonstrate that there is adequate capacity. This reverses the burden that RCRA clearly places on EPA to affirmatively demonstrate that there is inadequate capacity. In effect, EPA is saying: "Because we don't have data showing adequate capacity, we'll assume capacity is inadequate." This rationale turns predictions of inadequate capacity into a self-fulfilling prophecy, and thoroughly undermines the land ban.

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[3] It is possible, for example, that in the case of a company with more than one onsite facility, wastes now being disposed might be transferred to a different facility owned by the company, which facility now has excess treatment capacity. This kind of inter-plant (onsite) transfer could potentially make up for the small shortfall in commercial capacity projected by EPA.

To add insult to injury, EPA has revised RCRA §3004(h) by administrative fiat to eliminate the double liner and leachate collection system requirements for landfills and surface impoundments receiving banned wastes during the 2-year extension period. These important safeguards were included by Congress to minimize health and environmental damage at land disposal facilities managing banned wastes during the extension period. Yet EPA has managed to concoct an interpretation of this provision that would allow the use of even unlined impoundment and landfill units for disposal of banned wastes. In other words, in many cases, even if there are no minimum technology units at a facility, the facility is authorized to accept banned wastes for land disposal. This outrageous misconstruction of the statute nullifies the effect of the land ban until late 1988. It also discourages retrofitting of substandard impoundments, stymies expansion of treatment capacity and generally ensures that business will go on as usual for the foreseeable future.

NRDC and the HWTC are presently challenging this aspect of the solvent and dioxins rule in the U.S. Court of Appeals for the District of Columbia Circuit.[4] While we believe that EPA's position that unlined units can be used for the next two years to dispose of these banned wastes is extremely weak, the Court may, of course, choose to defer to EPA's interpretation of the law. The D.C. Circuit has increasingly been articulating the principle that agency interpretations of the laws they are charged with implementing are entitled to substantial deference unless they are clearly contradicted by the plain language of the statute.[5]

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[4] Hazardous Waste Treatment Council v. EPA, et al., No. 86-1657 (D.C. Cir., filed Dec. 1986).

Even if we do prevail, however, a judicial decision may not be rendered for at least a year, and probably more. In the meantime, much damage may have already been done to groundwater due to improper disposal of banned wastes in substandard facilities. A statement from RCRA's framers clarifying Congressional intent could help to persuade EPA to abandon its present unwise and unlawful course, and we urge this Committee to consider communicating a strong message to the Agency as soon as possible.

III. The Proposed Ban Rule for the California List Wastes Establishes Extremely High Thresholds that are not Protective of Human Health and the Environment.

Section 3004(d) clearly requires EPA to lower the statutory concentration thresholds for hazardous constituents in wastes on the "California List" where necessary to protect human health or the environment. However, EPA has proposed to adopt the statutory levels. These thresholds are extraordinarily high and present serious risks to human health.

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[5] See, e.g., NRDC v. Thomas, et al., No. 85-1294 (Decided Nov. 7, 1986).

In comments submitted to EPA, NRDC used EPA's own methodology to predict the levels of hazardous constituents to which people might be exposed via land disposal, if EPA were to adopt the statutory concentrations for California wastes. Our analysis shows that people could be exposed through drinking water to concentrations that would exceed the drinking water standards for arsenic, cadmium, chromium, lead, mercury and selenium, by 1,700 times.[6]

In the case of cyanide, setting the threshold at the statutory level (1,000 mg/l) could result in deadly levels of cyanide in drinking water. Our comments document that the statutory level for cyanide could cause contamination in water that would exceed the fatal dose of cyanide for a child by 15 times. Clearly, these statutory thresholds are not protective of human health.

We have recommended, therefore, that EPA lower the statutory concentration thresholds substantially, to levels that are consistent with protection of human health and the environment. Using as the starting point the National Interim Primary Drinking Water Standards (NIPDWS) (or Water Quality Criteria, where there is no NIPDWS) for metals and EPA's Draft 10-Day Health Advisory for cyanides, issued by EPA under the Safe Drinking Water Act, and using a factor of 6 derived by EPA through its VHS delisting model to account for some dilution or attenuation of these constituents in the environment, NRDC has urged EPA to promulgate the following concentration levels for metals and cyanides on the California List:

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[6] Concentrations of nickel would also exceed the Water Quality Criterion (WQC) by 1,700 times. The WQC was used for nickel because no drinking water standard has been promulgated for this metal.

Constituent[7]	Statutory Threshold	NRDC's Recommended Threshold
Arsenic	500 mg/l	0.3 mg/l
Cadmium	100 mg/l	0.06 mg/l
Chromium (VI)	500 mg/l	3.0 mg/l
Lead	500 mg/l	0.3 mg/l
Mercury	20 mg/l	.012 mg/l
Nickel	134 mg/l	.078 mg/l
Selenium	100 mg/l	.06 mg/l
Cyanides	1,000 mg/l	.096 mg/l

We have also urged EPA to reduce the statutory threshold for halogenated organics (HOCs) from 1,000 mg/kg to 700 ppb. Given EPA's failure to set a total organics standard for drinking water, we base this on extensive work done by the State of New York to develop health-based drinking water standards for synthetic and volatile organics. This work suggests that the appropriate health-based starting point is 50 ug/l. We have then used the dilution/attenuation factor of 14 that EPA derived for nearly 90% of the HOC's covered in its Toxicity Characteristic Leaching Procedure (TCLP).[8]

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[7] Thallium is not included in this table because it has never been run through EPA's VHS delisting model. However, we believe that were it to be run through the model, it also would have a dilution/attenuation factor of 6 and hence its recommended threshold would be 0.078 mg/l (compared to its statutory threshold of 130 mg/l).

Because the levels set by EPA for California list wastes are so high, the public continues to be faced with serious health risks. For this reason alone, a ban that applies only to wastes containing concentrations of constituents at the high statutory concentration levels would be virtually meaningless in terms of health and environmental protection. Moreover, although EPA lacks data which would tell us what proportion of California wastes fall within what concentration levels, it is certainly probable that the vast bulk of the wastes that contain constituents on the California list will not be covered by the proposed rule because dilute wastewaters are not included. Those wastes that are not restricted now may continue to be land disposed at least until August 1988, and in many cases until May 1990.[9] In addition, BDAT standards for these wastes are being postponed, thus decreasing the market for treatment. For all of these reasons, we believe that the "ban" on the California List is likely to be a paper tiger.

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[8] 51 Fed. Reg. 21675 (June 13, 1985).

[9] Those wastes that contain California list constituents at lower levels are prohibited from land disposal in thirds, according to the lengthier schedule established by §3004(g) of RCRA, 42 U.S.C. §6924(g). The allocation of wastes among the thirds is provided in EPA's final rule, issued on May 28, 1986. (51 Fed. Reg. 19300). An analysis of EPA's schedule shows that about half of the wastes in the first third, about one-third of the wastes in the second third and about half of the wastes in the third third contain one or more of the California list constituents. Id.

IV. EPA Has Not Defined The Criteria for Granting "No Migration" Exemptions from the Land Ban.

RCRA §3004 defines two circumstances under which hazardous wastes subject to the ban can continue to be disposed on or into the land. These are: (1) when wastes are treated in accordance with treatment standards promulgated under §3004(m); and (2) when an interested party demonstrates with a reasonable degree of certainty that there will be no migration of any hazardous constituent out of an injection zone or disposal unit for as long as the wastes remain hazardous.

Because the "no migration" exemption would allow untreated wastes to be land disposed, this provision could create a significant loophole in the land ban if improperly implemented by EPA. In its January 14, 1986 proposed rule for solvent and dioxin-containing wastes, EPA in fact read "no migration" to mean "no unacceptable migration". The Agency then proceeded to define as "acceptable" migration, very high concentrations of hazardous constituents in a drinking water well. Pressure from Congress and the public forced EPA to back down from this so-called "screening level approach" and to issue a final rule that is technology-based.

However, there is evidence that EPA still intends to grant no migration petitions where migration is predicted to occur. In the preamble to the November 7, 1986 rule, EPA makes no attempt to define the criteria for approving a no migration demonstration. Instead the Agency suggests three situations where such a petition might be granted, and one where it would be denied.[10] The latter is revealing for what it implies about the circumstances under which EPA might grant a petition. EPA states:

> The "no migration" standard clearly would be violated in a situation where unacceptable concentrations of hazardous constituents are occurring at the waste management boundary, even though the concentration at a potential receptor site some distance from the waste management boundary is below an applicable health-based level.[11]

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[10] The preamble states:

> The Agency has identified three scenarios that may satisfy the requirements of the statutory standard of "no migration". The first involves a situation where environmental parameters are such that no detectable migration of hazardous constituents would occur from the disposal unit. For example, this scenario may occur when a waste consisting of relatively immobile hazardous constituents is placed in a monofill located in an arid climate with no ground water recharge. Another example involves placement of a small volume of compatible waste in a massive and stable salt dome formation. The second would rely on an active chemical or physical process, such as the neutralization of a corrosive waste in a surface impoundment, where no hazardous waste remains in the unit. This is especially applicable to characteristic wastes. The third involves the temporary storage of hazardous waste in a land based unit, such as an indoor waste pile, where engineered containment systems are effective over the period the waste remains in storage.

51 Fed. Reg. at 40605.

[11] Id. (Emphasis added).

This statement implies that EPA might consider granting a petition where the converse were shown, i.e., where concentrations of hazardous constituents at the waste management boundary were deemed "acceptable." According to data described in the January 14, 1986 proposed land ban rule, which data have been gleaned from Part B permit applications, there is often a significant distance between the waste management boundary and the edge of the disposal unit. This distance can be as great as 4/5 of a mile, according to EPA.[12] Thus, the waste management boundary can clearly be a point located outside the disposal unit. Consequently, EPA has not foreclosed the possibility that it will provide "no migration" exemptions where so-called "acceptable" migration out of the disposal unit has occurred.

Because EPA has failed to provide criteria for approval of no migration petitions, the only way we will know whether this provision is being implemented properly is to closely monitor each petition application and EPA's response to it. This is a burdensome task for the public, and one which the public review procedures issued in EPA's Nov. 7 rule make even harder. The rule does not provide notice to the public until EPA already has made a tentative decision to grant or deny a no migration petition, and then provides only 30 days for the public to review and comment upon the application before the Administrator renders a final decision. Given the limited resources available to public interest organizations like NRDC, and the extremely tight timeframe allocated for public review, it will be difficult to oversee implementation of the petition process for no migration applications. Thus, EPA's definition of "no migration" will be determined in an ad hoc fashion, and will be largely shielded from public scrutiny.

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[12] 51 Fed. Reg. 1643 (Jan. 14, 1986).

In addition to the issue of "acceptable" migration, another significant concern is EPA's failure to define the "reasonable degree of certainty" which will be required of petitioners for a no migration exemption. EPA is increasingly relying on predictive models that often make questionable or nonconservative assumptions regarding the behavior and fate of wastes. Predictions made by such models cannot be said to provide reasonable certainty unless the models themselves are properly verified, validated and calibrated.

The extent to which the results of fate and transport modeling will be allowed as proof of no migration is of particular concern in the context of underground injection. This disposal method is now receiving almost 70% of all hazardous wastes land disposed under RCRA, and a separate rulemaking to implement the land ban for injected wastes, which takes effect in August 1988, is being conducted by EPA's Office of Drinking Water.

Injection of wastes takes place below aquifers that serve as underground sources of drinking water. Models that predict the extent of upward movement of wastes are being put forth for use in the no migration demonstration. However, EPA has not yet issued protocols to ensure that such models are properly verified and validated; issuance of such protocols appears to be several years away. In addition, at the depths at which wastes are injected, it is not possible to verify the accuracy of model predictions by environmental monitoring, thus making verification of the accuracy of these models extremely difficult if not impossible.

Nonetheless, we anticipate that there will be a great deal of pressure to allow use of these models to demonstrate no migration, especially for organic wastes, which are persistent and mobile and are not usually rendered nonhazardous or immobilized within the receiving zone itself; these wastes are therefore unlikely to pass a no migration test without the use of fate and transport modeling. We have urged EPA not to grant a petition that is based on the results of fate and transport modeling because we do not believe that these models are capable at this time of providing a reasonable degree of certainty that hazardous constituents will not migrate out of the injection zone.

V. Underground Injection Could Become a Giant Loophole in the Land Ban.

In terms of the sheer volume of hazardous wastes that are subject to the land ban, perhaps the most critical portion of the ban implementation rules will be that for wastes disposed by deepwell injection. These wastes account for about 70% of all hazardous wastes land disposed under RCRA (approximately 11 billion gallons annually)[13] and include solvents and other organics, as well as toxic metals and acidic wastes, on the California List. These massive volumes of waste are being injected primarily in the Gulf Coast and Great Lakes States; nationally, only 195 wells now receive the total volume of wastes, but capacity appears to be virtually limitless.

Wastes disposed by this method, which involves pumping wastes under pressure into porous geologic formations underlying the lowermost aquifer containing an underground source of drinking water, are subject to far less stringent regulation than when they are disposed via any other land disposal method.[14] This is in part because historically EPA's Office of Drinking Water has been the lead EPA office regulating injection. The Office of Drinking Water chose not to subject injection wells to standards comparable to those issued by the Office of Solid Waste for other hazardous waste disposal methods, when it promulgated the Underground Injection Control (UIC) regulations in 1980. The Agency has acknowledged the need to upgrade the UIC regulations for hazardous waste injection wells in order to ensure compliance with the no migration standard of RCRA.

A number of groundwater and drinking water contamination incidents have been documented as the result of deepwell

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13. U.S. EPA, Office of Drinking Water, "Report to Congress on Injection of Hazardous Waste" 8(1985).

14. W. Gordon and J. Bloom, "Deeper Problems" (NRDC, 1985).

injection of hazardous wastes. In its 1985 Report to Congress on Injection of Hazardous Wastes, EPA reported 3 cases in which injection of hazardous wastes caused contamination of underground sources of drinking water (USDWs) and 9 non-compliance incidents which could have led to contamination of a USDW.[15] A more recent report by the Underground Injection Practices Council has documented 8 instances of confirmed or suspected USDW contamination, 17 cases of leakage into unpermitted zones, and malfunctions at 43 of 106 wells studied.[16] These reports indicate that deepwell injection of hazardous wastes can cause serious groundwater contamination.

Although the number of cases of contamination from injection operations may not sound as dramatic as those for surface disposal facilities, unlike surface disposal methods such as landfills and surface impoundments, the ability to track the movement of wastes injected in the subsurface is extremely limited. Moreover, monitoring of waste movement in groundwater or in formations above the injection zone has not been required, and its accuracy is limited. Consequently, it is very difficult now, and will remain so, to accurately assess the extent of groundwater contamination that has resulted from injection operations. Because injection is the quintessential "out-of-sight, out-of-mind" technology, the comparatively few reported

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15. U.S. EPA, Office of Drinking Water, "Report to Congress on Injection of Hazardous Waste" 9-10 (1985).

16. Underground Injection Practices Council, "A Class I Injection Well Survey" 2-2 - 2-6 (1986).

incidents to date should not lull us into a false sense of security; what we see may be the tip of a very large iceberg.

To implement the land ban for injected wastes, EPA attempted to develop a rule through a "regulatory negotiation," in which NRDC participated. That effort, although valuable, did not produce an agreement, and EPA is now independently developing a proposed rule which should appear in the Federal Register sometime this month.

What became clear to us through the regulatory negotiation process was that injection is not truly a containment method for hazardous wastes. Injection works by filling up geologic formations with toxic substances and relies on time and vast spaces to dilute these substances. In effect, the subsurface could become a virtually limitless repository for the receipt of untreated hazardous wastes. The question is not whether wastes will migrate, but how far.

Some wastes, such as metals, may be immobilized within the receiving zone upon injection, and others such as acid wastes may be neutralized in the zone. These wastes may be able to pass a no migration test.

In light of the fact that persistent wastes, such as organics, are not transformed immediately upon injection, however, the no migration test cannot be satisfied for these wastes unless the injection zone is defined as a very large portion of the subsurface. We believed that the injection zone referred to in the §3004 no migration language of RCRA was meant to be the zone into which the well is completed and wastes are actually injected, not the geologic formations overlying it which are intended to confine the wastes.

However, EPA's current definition of the injection zone in the UIC regulations is so broad that the injection zone is a moving -- and ever-expanding -- target.[17] What this means for the land ban is that the potential exists for making "no migration" demonstrations merely by defining the boundary of the injection zone as the point where the applicant predicts migration will stop. In such a system, few injection wells would fail the test, thus rendering the land ban meaningless for these facilities and the huge volume of untreated wastes disposed in them. Moreover, such a system would amount to yet another unlawful iteration of the "acceptable migration" test for no migration.

We do not believe this was what Congress had in mind when it passed the land disposal prohibitions in 1984. We strongly recommend that EPA be given guidance on this question and instructed that the injection zone be defined as the receiving formation, even if this means that a number of injection wells will not pass the no migration test.

VI. EPA Has Failed to Impose BDAT Controls on VOC Emissions at Treatment Facilities Managing Banned Wastes, Thus Merely Transferring Hazardous Constituents from Land to Air.

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17. The UIC regulations define the "injection zone" as "a geological 'formation,' group of formations, or part of a formation receiving fluids through a well." 40 C.F.R. §146.3.

Yet another indication that EPA implementation is undermining the land ban are EPA's recently proposed standards for controlling air emissions of volatile organic compounds (VOCs) from facilities treating banned wastes, including solvents and HOCs on the California list. These standards, if promulgated, would sanction the transfer of highly toxic contaminants, including carcinogens and ozone-depleting substances, from land to air. This seriously undermines the purpose of the ban which is to reduce exposure to toxic constituents, and ensure use of waste management methods that minimize or eliminate waste or, where this is not possible, to require the use of BDAT to properly manage wastes in the first instance.

The cancer risks alone that EPA estimates would flow from EPA's proposed controls on VOC emissions are extremely high: 2.6 in 10,000. These risks exceed by two orders of magnitude the cancer risks levels that have long been considered by federal agencies as too high to be left unregulated. Risks to the ozone layer and the serious environmental consequences of ozone depletion are not even accounted for in EPA's risk assessment.

Contrary to the requirement of §3004(m), the proposed standards for emissions controls on VOCs are not based on BDAT. Technologies are available to reduce emissions still further -- in some cases by 100% -- but EPA has decided that achieving BDAT will cost more in dollars than it will save in lives. This rationale thoroughly undercuts the overriding philosophy of RCRA, which is to ensure a minimum level of protection for health and the environment in all cases. Indeed, EPA has strayed so far from the guiding principles of RCRA that the Agency openly admits in the preamble to the regulation that the proposed air standards will not be protective of human health and the environment at all facilities.[18] To fill in the gap created by its regulation, EPA proposes to toss the ball to RCRA permit writers (in large part, state regulators) to require additional safeguards. However, the permit writers are free to decide not to impose any requirements that exceed EPA's. In sum, EPA's proposed air rule ignores the BDAT requirement of §3004 and assures that once the ban takes effect, hazardous constituents will be merely transferred from land to air, at great cost to human health and the environment.

VII. The Land Ban Alone Will Not Stimulate Substantial Source Reduction or Recycling of Hazardous Wastes.

Even if the land ban were being implemented as Congress intended, NRDC believes that stronger and more direct measures will be needed to induce generators to reach the top of the waste management hierarchy by minimizing the hazardous waste they generate through source reduction and recycling. Although the data are far from accurate or complete, estimates of annual waste generation range from 247 million to 1 billion tons.[19] This is a huge volume of toxic material to manage.

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[18] 52 Fed. Reg. 3750 (Feb. 5, 1987).

[19] Library of Congress, Congressional Research Service, "Hazardous Waste Fact Book" 8 (1987).

The land ban can provide direct incentives for treatment of these wastes. However, it can only indirectly encourage source reduction. This is because generators may comply with the ban by any one of the following methods: meeting standards without treatment, treating their wastes, recycling, and not producing hazardous wastes in the first instance. If treatment is the least cost option of the three or if technical or other practical considerations make treatment the most attractive option to a waste generator, treatment may be selected over source reduction. However in our view, source reduction is the best option for reducing the size of the hazardous waste problem because it prevents the creation of wastes that must be managed.

Moreover, even if the RCRA land ban were working perfectly, it is only designed to cover those substances that are defined and regulated as "hazardous wastes" under RCRA. It will not stop hazardous substances from merely being shifted to other media, such as air and surface water; nor will it prevent RCRA wastes from being discharged to sewers under the POTW exemption or to air via burning in exempt or under-regulated boilers and industrial furnaces. The most effective way to control these releases of toxic substances is to prevent or minimize their generation in the first place. Yet RCRA currently pays only lip service to waste reduction.[20]

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[20] As noted in OTA's report to Congress, the 1984 RCRA amendments give waste reduction "relatively low priority." Congress of the U.S., Office of Technology Assessment, "Serious Reduction of Hazardous Waste," 45 (1986).

There is an emerging consensus that more direct measures will be needed to stimulate substantial source reduction. Various waste minimization bills are being prepared or have been introduced in state legislatures, such as New Jersey's, and by some members of Congress.

NRDC has spent the past year researching the growing body of literature on waste reduction, assessing State waste reduction programs, and consulting with experts around the country. The results of our research, to be published this fall, show that in order to significantly reduce the amount and toxicity of hazardous wastes, a comprehensive waste reduction program must be legislated and adopted by States.

In order to ensure that substantial source reduction occurs nationwide and to assure consistency among State programs, we believe that Federal legislation will be needed that sets the minimum criteria for State programs and provides technical assistance and financial support.

NRDC has identified 5 key elements that should be included in state waste reduction programs. The most critical element is an enforceable waste reduction performance standard that generators must achieve within the next 10 years. Our experience with other federal environmental programs over the years has convinced us that a voluntary waste reduction program is unlikely to succeed. Other elements of a program that we will recommend include the following: (1) requirements that generators perform mass balance waste audits, assess the potential for source reduction at their plants and establish waste reduction plans for achieving the performance standard; (2) improved waste reduction reporting requirements; (3) technical assistance to generators and (4) providing generators with financial assistance and incentives to reduce waste.

We look forward to working with you in the coming reauthorization of RCRA to develop an effective source reduction program. We believe that such an initiative will complement and strengthen the land ban and will move us forward towards achieving the goals of the 1984 amendments.

TESTIMONY

OF

RICHARD C. FORTUNA

EXECUTIVE DIRECTOR
HAZARDOUS WASTE TREATMENT COUNCIL
WASHINGTON, D.C.

Before

THE SUBCOMMITTEE ON HAZARDOUS WASTE AND TOXIC SUBSTANCES
OF THE COMMITTEE ON ENVIRONMENT AND PUBLIC WORKS
UNITED STATES SENATE

June 5, 1987

Good morning. My name is Richard Fortuna and I am the Executive Director of the Hazardous Waste Treatment Council. The Council is a national association of more than 50 commercial hazardous waste treatment firms and equipment manufacturers that share a common commitment to the primary use of alternative treatment technologies in the management of hazardous wastes, and to the restricted use of land disposal. The Council was the leading treatment industry group that worked for enactment of the 1984 RCRA Amendments, which established the land disposal ban program.

1. OVERVIEW

We are here this morning to urge that this committee do all it can to have EPA properly implement the land disposal ban for the California list of hazardous wastes. These wastes must be subject to land disposal restrictions by July 8, 1987, in accordance with RCRA Section 3004(d). That deadline is fast approaching. Yet what EPA has proposed is to flatly ignore Congress' express direction to assess the hazardous wastes on the California list and promulgate land disposal restrictions that represent a significant step forward for the program. Instead, EPA proposes to issue a rule that even the Agency knows would restrict almost no wastes, and would allow continued land disposal of wastes with extremely high -- even fatal -- concentrations of cyanide and heavy metals. This proposal would totally frustrate the phased program for the land disposal bans.

II. LEGISLATIVE BACKGROUND

Senator Baucus, you and members of the committee will recall that during work on the 1984 RCRA amendments, you decided to establish a program to phase out the land disposal of untreated hazardous wastes within five years. But then the committee asked, how can we reasonably get from here to there? You decided to phase in the land disposal restrictions in three steps during the five-year period. The first step was the ban on land disposal of certain solvent and dioxin wastes which went into effect in November 1986. The second phase was to be the California list, which is a list of liquid hazardous wastes containing specified concentrations of cyanide, metals, and PCBs, and hazardous wastes containing halogenated organic compounds (HOCs) in liquid or solid form. This broad list of hazardous wastes was selected as the second phase in the land ban program in order to achieve a substantial phase-in of the restrictions and because the state of California had already restricted land disposal of these wastes in 1982. Finally, EPA must restrict the land disposal of all other RCRA hazardous waste, one third at a time by specified deadlines. By 1990, the land disposal program should be fully in place.

III. SUMMARY OF DEFICIENCIES

The California list restrictions were intended to be a substantial step forward in this phased program. Instead, EPA proposes to make the California list restrictions a useless exercise. Let me identify four basic deficiencies in EPA's proposed regulations. First, EPA has simply ignored the clear requirement of the statute to assess the statutory concentration levels for the wastes on the California list and to lower those levels as necessary to protect human health and the environment. If EPA does not lower the levels, the California list will be meaningless, from both a treatment and public health perspective. Second, EPA has actually in effect raised the concentration levels by proposing that a waste will be on or off the California list based on testing the diluted waste extract, not the waste itself. For cyanide wastes, this means the test can be fatally hazardous to lab technicians. EPA should either test the waste itself, or preferably lower the levels that are tested for.

Third, EPA has failed to clearly prohibit, as Congress intended, the mixing of cyanide bearing wastes with fly ash or similar material that dilutes the waste with no real treatment or stabilization of the cyanide. Although there is a general prohibition in the regulations on dilution, EPA personnel have indicated that mixing with fly ash would be allowed.

Fourth, EPA proposes to allow restricted wastes to be managed in unlined pits, ponds, and lagoons that do not meet the minimum technology requirements of the law. Although generally impoundments have until November 1988 to be retrofitted with double liners and leachate collection systems, this is not a license to continue management of restricted wastes in leaking, unlined lagoons.

IV. THE PROHIBITION LEVELS FOR METALS AND CYANIDES

I would have to say the major deficiency in EPA's proposed approach is the first one, the failure to heed Congress' direction to lower the statutory concentration levels that determine whether a waste is even on the California list. The concentration levels in Section 3004(d) of RCRA were set at 10,000 times the National Primary Drinking Water Standards because that is what California did. These levels were intended by Congress, however, simply to be a "starting point" for EPA. In enacting this provision, Congress recognized that these levels were very high, and you directed EPA to determine whether or not they were protective, and to lower them based upon that determination. RCRA Section 3004(d)(2) plainly states that "[w]hen necessary to protect human health and the environment, the [EPA] Administrator shall substitute more stringent concentration levels than the levels specified." This committee emphasized in its report on the legislation that the "specified concentration levels . . . are a conservative starting point for the analysis" to be conducted by EPA, and that "the specified concentrations are not intended to be binding on the agency." See Senate Report No. 284, Committee on

Environment and Public Works, at page 17. Thus EPA has an affirmative obligation to review the wastes on the California list, and to make an affirmative determination on the protectiveness of land disposal of these wastes at the specified or at lower concentration levels.

Yet EPA did nothing. EPA actually has substantial data showing that the statutory levels for metal-bearing and cyanide-containing wastes must be lowered to be protective, and EPA ignored this data. Back in 1980, the Agency developed the so-called EP toxicity test for almost all of the metals that are now present on the California list. This test for determining when a waste is hazardous was intended, according to EPA, to "identify wastes which are capable of posing a substantial present or potential hazard when improperly managed." See the Federal Register of May 19, 1980, volume 45, at page 33110. At that time, EPA chose a concentration level of 100 times drinking water standards (not 10,000 times) as the level necessary to protect human health and the environment against substantial hazards posed by improper management of the waste. This was based on a mismanagement scenario which assumed that 5% hazardous waste would be co-disposed with 95% solid waste in an unlined municipal landfill. Thus EPA has already determined that the management of metal-bearing hazardous wastes at levels greater than 100 times drinking water standards, when placed in uncontrolled land disposal environments, will pose a substantial threat to human health in the environment.

In its proposal, EPA argued that the mismanagement scenerio relied on to develop the 100x levels assumed disposal in an unlined municipal landfill, whereas RCRA landfills must now have liners. But what EPA did not consider is that we are mainly talking about managing the California list wastes in surface impoundments, most of which are in fact operated without any liners. The California list consists of liquid hazardous wastes, and liquids are already banned from disposal in RCRA landfills. So the practical effect of the California list restrictions is on storage and disposal in surface impoundments, not landfills. EPA found in 1984 that there were over 200,000 unlined pits, ponds, and lagoons for hazardous wastes in this country, representing the same potential risks of groundwater contamination as an unlined municipal landfill. If anything, the potential risks presented by the California list wastes are far worse because the mismanagement scenerio used by EPA in 1980 to arrive at the 100x levels for metal-bearing wastes assumed only 5% hazardous wastes mixed with solid waste, not 100% hazardous wastes placed in an unlined hole in the ground.

We have carefully reviewed EPA's proposal with our member companies that provide treatment for the California list wastes, and we have concluded that only by lowering the statutory levels to 100x drinking water standards will the California list restrictions be a meaningful step in the land disposal ban program. The statutory levels are so high that California list wastes with 240,000 ppm leachable chromium, or 180,000 ppm leachable lead, or 50,000 total cyanide would still not be subject to any land disposal restrictions. This means that if the California list is promulgated as proposed, the worst plating bath solutions with extremely high concentrations of heavy metals and cyanide could still be land disposed without any restrictions. Using EPA's own computer models, this means that management of the California wastes in unlined lagoons, as is common, will result in groundwater contamination for metals more than 1000 times higher than is safe. In fact, for cyanide-bearing wastes on the California list, groundwater contamination would be 15 times higher than the level that can be fatal to a child.

It is ironic, and somewhat fortunate I guess, that few hazardous wastes generated by industry today contain concentrations of metals and cyanide as high as the California list statutory levels. Almost all of the hazardous wastes that are treated by our member companies start out with concentrations lower than the statutory levels for the California list. But this only emphasizes that the California list restrictions, as EPA proposes to implement them, would be meaningless. No wastes, or very few wastes, would even be covered as several Council members will testify later this morning. EPA must lower the concentration levels for the California list wastes if the restrictions are to mean anything, and concentration levels at 100 times drinking water standards are supportable based on the levels previously established by EPA as necessary for adequate environmental protection.

V. CAPACITY TO TREAT "CALIFORNIA LIST" WASTES

You may be wondering, if our member companies are treating wastes that come in at concentrations below the statutory levels, what levels are being achieved by treatment? The commercial firms that operate treatment facilities for the California list wastes across the country, including the companies that will testify here this morning, are treating these hazardous wastes down to "delisting" levels of 6-10 times drinking water standards -- which means the wastes are no longer listed under RCRA as hazardous. The treatment technologies available today can easily treat the California list wastes well below the level of 100 times drinking water standards which we believe should trigger the land disposal restrictions. We are not talking about complex and costly technology, either. The basic chemical treatment processes for reducing metals through precipitation and stabilization and cyanide oxidation are well known and widely available at low cost. Nor is there any problem with available capacity. EPA itself agrees that almost all commercial treatment facilities for the California list wastes are operating well below capacity. In some cases, more than half their capacity is unused and available for treating the California list wastes. If the capacity is available, there is just no reason not to use it.

VI. TESTING METHODS

The next major problem with EPA's proposal is with the testing provisions. A waste would be tested to see if it is on the California list by determining the concentration levels in the waste leachate from an extraction procedure, not in the waste itself. Since the test EPA has prescribed requires a 20 to 1 dilution to obtain the waste leachate, this further raises the concentration levels which determine whether the waste is restricted. However, in light of the overall desirability of an extraction procedure to distinguish between sloppy and sound stabilization techniques, we believe that concentrations of constituents should be measured in this manner, rather than directly in the waste, but that the concentrations levels themselves then clearly must be lowered to account for the dilution.

Moreover, the leachate test for cyanide wastes is just plan dangerous. The test can cause the release of hydrogen cyanide gas at the end of the extraction procedure. This is a significant deficiency and a danger to technicians. Clearly EPA should use the total cyanide distillation test which is approved method 9010 in EPA's "Manual of Methods for Analysis of Solid and Hazardous Wastes."

VII. TREATMENT OF CYANIDE WASTES

Finally, the Agency should not allow the use of solidification or stabilization as a method of treatment of cyanide wastes. Unlike metal-bearing wastes, stabilization with lime or fly ash does nothing to chemically transform and/or immobilize the cyanide, which is otherwise a very mobile constituent. Such mixing of cyanide wastes with fly ash and similar materials is dilution, not treatment. EPA needs to make this clear.

VIII. RELATED LAND DISPOSAL BAN ISSUES

We are also very concerned about the Agency's decision to allow restricted wastes to still be managed in unlined lagoons that do not meet the minimum technology requirements of double liners and leachate collection systems. The 1984 RCRA Amendments required retrofitting of all existing lagoons with liners and collection systems by 1988, but the interim land disposal prohibitions, such as the California list, were intended to prohibit the management of restricted wastes in surface impoundments that do not meet the minimum technology requirements for protecting human health and the environment. It makes absolutely no sense for the land disposal restrictions to prohibit disposal of untreated hazardous wastes in landfills, but allow those same wastes to go into unlined pits, ponds, and lagoons. What EPA is doing is plainly illegal, and should be stopped.

IX. CONCLUSIONS

In conclusion, we strongly recommend that EPA lower the restriction levels for metals on the California list to a level that reflects 100 times the drinking water standards, a level previously found necessary by EPA to adequately protect public health and the environment. We are not urging that EPA go all the way to the restriction levels that will be imposed in the final phases of the land ban programs, but only that a reasonable interim step be taken, as Congress intended. For the cyanide wastes, EPA must require proper pretreatment to avoid leaching when these wastes are stabilized. We also urge EPA to rectify in the California list rule the Agency's ill-advised decision to allow restricted wastes to be managed in unlined lagoons.

Thank you for this opportunity to present our views on the California list restrictions. I would also like to discuss several related concerns with the land disposal program during my oral presentation.

TESTIMONY OF PETER N. BIBKO
VICE PRESIDENT AND GENERAL COUNSEL
CHEMFIX TECHNOLOGIES, INC.
METAIRIE, LOUISIANA

UNITED STATES SENATE
THE HAZARDOUS WASTE AND TOXIC SUBSTANCES SUBCOMMITTEE

COMMENTS ON THE IMPLEMENTATION OF THE LAND DISPOSAL RESTRICTIONS BY THE U.S. ENVIRONMENTAL PROTECTION AGENCY

JUNE 5, 1987

TESTIMONY OF PETER N. BIBKO

Good morning, Mr. Chairman, Members of the Subcommittee, Ladies and Gentlemen. My name is Peter Bibko. I am Vice President and General Counsel for Chemfix Technologies, Inc., or CTI, a Louisiana-based company specializing in the chemical fixation of hazardous wastes. CTI presently provides on-going chemical fixation services to municipalities and industry in California, Louisiana, Illinois, Massachusetts, and New Jersey.

I thank you for this opportunity to present our comments on the U. S. Environmental Protection Agency's implementation of the land disposal restrictions for "California List" pollutants, in addition to providing our answers to specific questions raised by the Subcommittee by letter of May 22, 1987.

I am pleased to tell you the overall "land disposal scheme" contemplated and enacted by Congress has had an extremely positive effect on our industry and on the planned growth and development of Chemfix Technologies, Inc. This Congressional action has resulted in a new awareness in the regulated community that the continued disposal of untreated hazardous wastes will no longer be tolerated or condoned.

Given our optimism, we were indeed greatly discouraged by EPA's recently proposed plan for implementing this Congressional intent which, in our opinion, Mr. Chairman, will result in nothing more than a continuation of present disposal practices or a "business as usual" atmosphere at all hazardous waste landfills. This will result because, for reasons which I will discuss, absolutely no new pretreatment requirements will be required for the disposal of "California List" pollutants at any hazardous waste facility nationwide.

We at CTI certainly do not believe that this was the intent of Congress in enacting these land ban provisions.

By way of background, CTI previously participated in the preparation of a detailed letter from the Hazardous Waste Treatment Council ("HWTC") to Ms. Eileen Claussen of EPA (Exhibit A) which emphasized the commercial availability of fixation technology capable of pretreating "California List" pollutants to the 100 times health-based standard or at the characteristic level considered by EPA to be protective of public health and the environment.

EPA not only rejected the characteristic level as a suitable pretreatment standard, but refused to even review the efficacy of available fixation treatment technologies stating only that it felt it lacked "adequate" data to render a decision:

> "The Agency is not proposing BDAT for other (non-solvent) California list constituents at this time . . . (51 FR 44717). The precipitated material is often dewatered and/or stabilized with lime, kiln dust, Portland cement, or other materials . . . in order to further reduce the mobility of the waste. Given the variety of wastes covered by this category, and the lack of adequate data on the performance of stabilized materials, the Agency does not believe that it is in a position to specify BDAT at this time." 51 FR 44727.

During January 1987, CTI attended a public meeting convened by the Agency in Washington, D.C., for the purposes of presenting data to the Agency clearly showing that fixation technology is, in fact, capable of reducing leachate concentrations of "California List" pollutants from a wide variety of sources to below "characteristic" levels.

Data presented by CTI summarized the results of stabilization tests showing that from 95 to 100 percent of all waste streams tested by CTI have been treated through chemical fixation to below the "characteristic" or 100 times drinking water level.

On February 6, 1987, CTI supplemented the record by submitting formal comments providing these data clearly demonstrate that such technology has been commercially proven and is indeed presently "available" for use today.

Turning now to the specific questions raised by the Subcommittee, Mr. Chairman, we believe that, for reasons further discussed below, EPA has erred in failing to recognize that chemical fixation is demonstrated, available, and economically feasible to pretreat "California List" metal pollutants to characteristic levels.

ADEQUATE COMMERCIALLY PROVEN FIXATION CAPACITY NOW EXISTS TO PRETREAT CALIFORNIA POLLUTANTS PRIOR TO LAND BURIAL

CTI has treated hundreds of millions of gallons of municipal and industrial hazardous wastes ranging in diversity from chromium-contaminated, municipal sludge wastes from the leather tannery industry to metal hydroxide wastes contaminated with cadmium, chromium, lead, nickel, and mercury; as well as petroleum industry wastes contaminated with arsenic, chromium, lead and mercury. My point is, of course, that chemical fixation and stabilization is, in fact, presently demonstrated, available and commercially feasible. A few examples should suffice:

CTI has saved a major oil company 30 million dollars by treating "California List" lead and chromium pollutants to "delistable" levels which are, of course, far lower than the "characteristic" levels rejected by EPA. On July 10, 1986, CTI initiated an eight million dollar clean-up program with the client to process and treat oil refinery waste. The project involved utilizing chemical fixation to treat and convert some sixty million gallons of listed hazardous waste into an environmentally safe, clay-like product. As a result of CTI's success with this waste treatment program, EPA and the Illinois Pollution Control Board both granted a final "delisting" of the resultant CHEMFIX® product which legally reclassified the waste from a hazardous to a nonhazardous waste. These decisions by both regulatory agencies were based on test results showing that the resultant CHEMFIX® product was nonhazardous and that "California List" pollutants were immobilized, thereby preventing their release into the environment.

In another example, under a court-mandated consent order and facing stiff penalties from federal and state authorities, a Massachusetts sewerage district retained CTI to provide treatment of a chromium-contaminated, municipal sewage waste. With their incinerator shut down and discharge of sludge to their harbor an unacceptable option, local officials were faced with the prospect of extraordinarily high costs associated with out-of-state disposal options.

Given just six weeks to respond, CTI brought in mobile processing equipment to meet the court-mandated, start-up date. Following successful start-up, CTI installed an automated treatment system with parallel processing units to provide the sewerage district with assured continuous operation. The resultant reuse product, NATURITE®, was contracted for disposal by CTI in a local landfill. In cooperation with the sewerage district, CTI initiated a year-long study of end-use applications of the NATURITE® product in conjunction with state regulatory officials, local authorities, and independent engineering firms. The study confirmed that the CHEMFIX® process controlled heavy metal migration, controlled existing pathogens, and eliminated the nuisance problems associated with disposal. The NATURITE® product was subscquently approved by the Massachusetts Department of Environmental Quality Engineering for use as daily cover and as a final capping material for sanitary landfills. In December

1985, satisfied sewerage district officials extended the CTI contract until 1991. With the five-year agreement, the sewerage district is now free from obligation to install a previously required, redundant treatment system that would have cost more than one million dollars to build. The fixation process has taken a serious sludge disposal problem, and a persistent political headache, and converted it to a community asset.

In yet another example, CTI and a major steel company have mutually agreed to perform a preliminary study of the technical and economic applicability of the CHEMFIX® process on steel production wastes. Samples of Electric Arc Furnace ("EAF") dust, which is currently designated by the EPA as a hazardous waste, were treated to immobilize the "California List" pollutants such as lead, cadmium, and chromium. CTI and the steel company are exploring one of the potential alternatives to land disposal through the chemical fixation and stabilization of EAF dust in such a manner as to reduce leachability of heavy metals below "delistable" concentrations. The preliminary study by CTI and the steel producer successfully demonstrated the delisting of material as an alternative to continued disposal of EAF dust as a hazardous waste.

My comments must, of course, be limited to the capabilities known to CTI, although CTI is but one of many companies capable of pretreating hazardous waste prior to landfill disposal. While the size and configuration of our units vary depending upon the particular application, each of our mobile units is capable of processing between 150,000 to 500,000 gallons of waste per day. Since we currently have eight units in operation, we now have the capability of processing at least two million gallons per day. In addition, Mr.

Chairman, CTI could easily provide an additional two to four million gallons per day treatment capacity to the marketplace within 120 - 150 days of a request for such services and could provide an additional eighteen to twenty-four million gallons of treatment capacity in the next twelve months.

Moreover, our patented treatment equipment is modular in design and such that mobile systems may be easily installed and operated in tandem, thereby providing greater flexibility in meeting changing treatment needs at a hazardous waste landfill or site of pollutant generation.

COMMERCIALLY PROVEN FIXATION TECHNOLOGY IS CURRENTLY AVAILABLE TO PRETREAT CALIFORNIA LIST POLLUTANTS TO RESULT IN LEACHATE CONTAINING LESS THAN 100 TIMES THE DRINKING WATER STANDARD FOR "CALIFORNIA LIST" POLLUTANTS

CTI, along with other treatment companies, presently offer the technology and capacity to pretreat wastes containing "California List" pollutants to levels which will result in a "nonhazardous" leachate after disposal in a hazardous waste facility. Actual data summarized in Exhibit B of my testimony clearly shows that from 95 to 100 percent of all waste samples containing "California List" pollutants that have been treated by Chemfix Technologies, Inc. during the past six years were treated to below "characteristic" levels. I want to emphasize, Mr. Chairman, that we considered all samples analyzed by our company in reaching this conclusion and did not in any way discriminate among samples or test results in seeking to support our position. For the record, you will note that 188 to 258 separate samples were considered, depending upon the particular pollutant of concern in reaching this conclusion. Perhaps even more important from the viewpoint of regulation, these samples were obtained from a wide variety of different waste sources likely to be regulated by EPA, including:

API Separator Waste
Acrylonitrate Production Waste

Aerobically Digested Sewage Waste
Aircraft Maintenance Waste
Aluminum Base Sludge
Alumina-Based Process Sludge
Anodized Aluminum Sludge
Anodizing Sludge
Arsenic Contaminated Sludge
Asbestos
Basic Oxygen Furnace Waste
Brake Lining Scrubber Waste
Brass Tubing Production Sludge
Catalyst Waste Sludge
Caustic Soda Production Waste
Copper Mining Waste
Creosote, PCP, Phenolic By-products
Creosote Sludge
Electric Arc Furnace Dust
Electroplating Waste
Epoxy Resin Production Waste
Ferric Hydroxide Waste
Fiber Dye Process Sludge
Foundry Air Emission Sludge
Galvanizing Waste
Incinerated Municipal Waste Ash
Inorganic Chemical Manufacture Sludge
Metal Plating Waste
Mine Facilities Sludge
Municipal Waste Centrifuge Sludge
Municipal Waste Filter Cake
Municipal Sewage Waste
Oil Drilling Mud
Oil Refinery Waste
Organic Chemical Manufacture Sludge
Pharmaceutical Sludge
Phosphatizing Sludge
Phosphatic Clay
Pickle Liquor Sludge
Red Mud Barite Waste
Silicate Sludge
Titanium Oxide Production Sludge
Vitamin C Production Sludge
Wastewater Sludge from Pigment Manufacture
Wastewater Sludge from Rubber Manufacture
Water-based Drilling Fluid

Of course, the point I am trying to make, Mr. Chairman, is that we at CTI have been successful in rendering wastes containing "California List" pollutants nonhazardous or below the 100 times drinking water standard, irrespective of the particular source of these pollutants. As a result, we certainly believe it reasonable and attainable to require pretreatment of wastes containing "California List" pollutants as required to result in the generation of a "nonhazardous leachate" with respect to each such pollutant. Since EPA has by regulation established 100 times drinking water standard for each such pollutant as the threshold of "hazardousness" for each such pollutant, we certainly believe the "characteristic" level to be reasonable and totally consistent with the intent of Congress.

CTI believes that EPA has itself already recognized that chemical fixation and stabilization will reduce polyvalent metal "California List" pollutants to "delistable" levels (or approximately 6 to 33 times the health-based standards) let alone to the 100 times health-based "characteristic" level now rejected as unattainable by EPA.

In 1984, based upon review of data submitted by Amoco Oil Company in support of its petition to delist a waste containing "California List" pollutants (lead and chromium), EPA specifically acknowledged reductions to "well below" 100 times drinking water standard. EPA stated:

> "These data appear to demonstrate the nonhazardous nature of the Chemfix treated waste. In particular, the extract results from conducting the oily waste EP indicates that total chromium and lead are well below the maximum EP toxicity limits. These results appear to demonstrate the success of the Chemfix treatment process in immobilizing the toxic heavy metals." 49 FR 42591, October 23, 1984. (Emphasis added.)

Moreover, and especially important in view of EPA's published concern over the long-term performance of stabilized material (see 51 FR 44727), EPA has already acknowledged that "California List" metals are permanently bound into the CHEMFIX® product:

> "Amoco also submitted additional leachate data by conducting the MEP and the Oily Waste MEP. All extract concentrations for total chromium and lead are well below the maxium [sic] acceptable Extraction Procedure leachate levels in the initial extraction while subsequent extractions show negligible concentrations of both metals. This data therefore indicates that the Chemfix® treatment residue is stable, posing no potential leachate problems over the long term." 49 FR 42591, October 23, 1984. (Emphasis added.)

The Agency's position is even more perplexing since EPA has acknowledged that the chemical fixation process may be varied to achieve desired leachate levels for "California List" metal pollutants:

> "The Agency has data submitted in other delisting petitions on the Chemfix® process and on other cementitious stabilization processes that indicate the adjustment of mixing ratios can alter the leachability of each metal toxicant. CTI further claims that they can achieve leachate levels of six times the regulatory standards when treating GMC's waste." 51 FR 41312, at footnote 2. (Emphasis added.)

WASTE GENERATORS MAY ACTUALLY SAVE MONEY THROUGH CHEMICAL FIXATION RATHER THAN SIMPLE SOLIDIFICATION NOW PRACTICED TO COMPLY WITH THE LIQUIDS BAN

In many cases the additional pretreatment mandated by Congress may actually be provided at little or no additional cost to a generator or, in some cases, at a significant and substantial savings to a generator.

Pretreatment may clearly result in a degree of leachate reduction allowing the waste to be formally delisted and capable of being disposed at a nonhazardous waste facility with far less potential liability and greatly reduced disposal costs. As summarized in Exhibit C, one of our clients recently realized cost savings of about thirty million dollars after delisting hazardous wastes through chemical fixation since the nonhazardous product could be disposed in a nonhazardous waste facility. This savings included consideration of an approximately ten million dollar treatment cost.

In addition to delisting savings available to many generators, other generators may still realize substantial savings if wastes are properly pretreated prior to disposal of a hazardous waste facility. Recent studies by PQ Corporation, a leading supplier of fixation reagents, conducted at a major hazardous waste facility (Exhibit D), report up to a 4.6 million dollar savings due to the added benefit of reduced waste volumes after chemical fixation, compared to volumes resulting from the present use of kiln dust to solidify wastes to meet the previously established liquids ban enacted by Congress. Therefore, the PQ study concluded that kiln dust needs could be substantially reduced through fixation, resulting in less waste to be transported and disposed. Even more important, however, not only would there be less waste to bury at a lower cost, but these "California List" metal pollutants are chemically fixed within the waste and, therefore, far less susceptible to leaching.

THE PROPOSED LAND DISPOSAL BAN REGULATIONS WILL RESULT IN LITTLE OR NO UTILIZATION OF AVAILABLE FIXATION TECHNOLOGY

Despite early optimism after enactment of the 1984 RCRA Amendments, we presently anticipate little or no increase in demand for fixation technology at hazardous waste landfills since liquid wastes containing "California List" pollutants will continue to be "legally" disposed of at hazardous facilities after simple kiln dust solidification irrespective of leachate concentrations likely to contaminate ground water at such facilities. The Agency has plainly stated that wastes solidified to comply with the liquids in landfill ban will simply be immune from further regulation:

> "Except for HOCs (which are prohibited from land disposal in both liquid and non-liquid form), RCRA section 3004(d) prohibits the land disposal of California list wastes only if such wastes exist in liquid form. . . .

> Except for the HOC wastes, which are prohibited in both liquid and non-liquid form, Congress was concerned with the land disposal of California list constituents only in their liquid or mobile form. Therefore, a liquid hazardous waste containing a California list constituent may be treated so as to render the waste a non-liquid and subsequently land disposed without being subject to the restrictions in section 3004(d)." 51 FR 44717, 44718, December 11, 1986.

The position of the Agency is particularly confusing since the addition of large volumes of kiln dust to simply solidify waste without any substantial treatment benefits would certainly appear contrary to EPA's "prohibition on dilution":

> "In the November 7, 1986, Federal Register notice, the Agency promulgated a final rule (to be codified at 40 CFR 268.3) which prohibits the regulated community from diluting restricted wastes "as a substitute for adequate treatment to achieve compliance with Subpart D of this part . . . .
>
> . . . EPA is today proposing to amend the (Part) 268.3 (dilution prohibition) to include dilution to avoid a prohibition in Subpart C of Part 268 (e.g., dilution to below the restrictions levels for the California list wastes)."

In conclusion, unless Congress now acts to clarify its intent to EPA, we believe that demand for fixation services will be practically non-existent. We have frequently thought that we were about to turn that proverbial corner and experience new demand due to increasing Congressional concern over continued land burial of untreated wastes. But as of now, Mr. Chairman, we at CTI have not yet seen the corner, let alone turn the corner; and, unfortunately, the recent proposal of the Agency toward implementing the Congressional intent encompassed in the landfill provisions leads us to believe that the corner is a long way from being turned.

In order for EPA to meaningfully protect groundwater resources by assuring pretreatment of "California List" pollutants consistent with land ban provisions, the Agency must:

(1) Acknowledge and adopt the wealth of existing scientific data clearly showing that "California List" pollutants can be treated to well below "characteristic" levels, as required to protect public health;

(2) Recognize the proven availability and commercial feasibility of such treatment technology; and

(3) Prohibit simple solidification or kiln dust dilution as a means of circumventing Congressional treatment intent, where such solidification does not result in significant leachate reductions, when the residue is adjusted for dilution.

HAZARDOUS WASTE TREATMENT COUNCIL
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December 8, 1986

Ms. Eileen Claussen, Director
Characterization and Assessment Division
U.S. Environmental Protection Agency
401 M Street, SW, Room SE240
Washington, DC 20460

RE: Proposed Land Disposal Ban for California List Wastes

Dear Eileen:

Pursuant to our meeting on September 17 to discuss EPA's implementation of the landfill ban requirements for the "California List" wastes, and preliminary review of the proposed rule itself, I am writing to express concern with several aspects of the Agency's approach. We request an opportunity to testifv at the January public hearing to examine the structure and deficiencies of the proposal.

I. OVERVIEW

We are shocked to learn that the Agency has proposed to simply maintain the statutory treatment levels for the California list metal-bearing wastes. This approach totally ignores the statutory responsibility to affirmatively determine the protectiveness of these statutory "starting points", and conveniently overlooks a wealth of data in EPA's own files on the ability of many firms to treat these wastes to protective levels using the best treatment technology currently available. This approach establishes a virtual null set with respect to California metal-bearing wastes that will be subject to any land disposal restriction in July, 1987. Moreover, we fail to see the Agency's logic in setting treatment standards. Technology-specific BDAT standards have been imposed for California list halogenated organics (e.g. incineration). Yet, the Agency stands pat on the metals and ignores BDAT because data hasn't presented itself to show that the statutory levels are unprotective.

As we discussed at the meeting, the "California List" is a mechanism to begin the initial "starting point" of phasing in the land disposal restrictions on all hazardous wastes with the exception of the F001-F005 wastes and the dioxins. It is indeed configured differently than the other prohibitions, which are based on the characteristic and listed wastes in the Part 261 regulations. Clearly the "California List" was not intended to be so broad in scope that it would encompass or surpass the restrictions that are scheduled for wastes that are occurring at the 45, 55, and 66 month deadlines.

At the same time, it is inconceivable that promulgation of the land disposal ban would allow less treatment (i.e. 10,000 times the Drinking Water Standards for metal constituents) to occur than would currently be required under the EP toxicity characteristic levels (i.e. 100 times the Drinking Water Standards). Without going through sophisticated risk assessments, it is difficult for us to see how statutory treatment levels can be deemed protective, when they are virtually 5 orders of magnitude (10,000 times) above the standards used for establishing related land disposal standards.

II. HSWA PROVISIONS AND LEGISLATIVE HISTORY

Regarding the EPA authority to reduce concentration levels, and determine whether they are protective, the legislation states that:

- "When necessary to protect human health and the environment, the Adminstrator shall substitute more stringent concentration levels than the levels specified [by statute]." (Emphasis added). [Section 3004(d)(2)]

- That the specified concentration levels: "are a conservative starting point for the analysis. These wastes at these concentration levels clearly meet the "highly toxic" standard. The specified concentrations are not intended to be binding on the Agency. Indeed, the Adminstrator may substitute more stringent concentration levels for the levels specified . . . . ". [S. Rep. 284, 98th Cong., 1st Sess. 17 (1983)]

- "These levels are a reasonable regulatory starting point and, at levels 10,000 times the National Primary Drinking Water Standards, are conservative. The Administrator may substitute more stringent concentration levels than the levels specified . . . . ". [H.R. Rep. No. 198, 98th Cong., 1st Sess. 35 (1983)]

Regarding the restriction on dilution, the legislation states that:

- "The Committee intends that dilution to a concentration less than the specified thresholds by the addition of other hazardous waste or any other material during waste handling, transportaion, treatment, or storage, other than dilution which occurs as a normal part of a manufacturing process, will not be allowed". (H.R. Rep. No. 198 at 34)

- Although not referring exclusively to the California List levels, it also states: "The dilution of wastes by the addition of other hazardous wastes or any other materials during waste handling, transportation, treatment or storage is not an acceptable method of treatment to reduce the concentration of hazardous constituents. Only dilution which occurs as a normal part of the process that results in the waste can be taken into account in establishing concentration levels. (S. Rep. 284 at 17)

III. STATUTORY v. LOWER LEVELS FOR METALS

The Agency's reasons for failing to propose more stringent treatment levels for California list constituents, particularly the metals, is curiously circular, if not convoluted. The Agency states the following:

- The Agency believes that it is not compelled to impose more stringent treatment standards than those specified by the statute, or to determine whether the statutory levels are protective.

- The Agency states that it cannot use BDAT in establishing these standards for the California metals because data does not exist on all wastes, and because the statute specifies that it must make this decision on the basis of what is "necessary to protect human health and the environment". Thus, BDAT withstanding, the Agency believes that it cannot promulgate more stringent land disposal standards for metals unless they first determine that these lower levels are protective, rather than determining whether the statutory levels are themselves protective.

- However, the Agency has previously promulgated a series of protective level determinations for these very metals in the context of the extraction procedure toxicity characteristic (EP). This was done under its statutory charge to "issue such regulations as may be necessary to protect human health and the environment".

- The EP levels for toxic metals was established at 100 times the drinking water standards for these constituents as measured in the extraction medium.

- The EP toxicity characteristic for metals, of 100 times the drinking water standards (e.g. 5 ppm for lead), is itself over 100 times more stringent and protective than what the Agency has proposed for this same constituent on the California list land disposal ban (e.g. 10,000 times the drinking water standards or 500 ppm lead).

- The Agency reconciles this disparity by stating that the EP toxic levels for metals were not based on "protective criteria", but rather were arbitrarily derived. We cannot have it both ways. The more current and increasingly stringent treatment levels for metals established during waste delisting and characterization cannot now be summarily dismissed as a basis for establishing and circumscribing the universe of wastes subject to the California land disposal ban at this time.

IV. DISCUSSION

In November, 1985, the Agency lowered the treatment level for the metal constituents that are delisted by almost two orders of magnitude from 100 to six times the drinking water standard. These levels are what the Agency now believes are necessary to protect human health and the environment, levels which also coincide with the treatment levels of the best demonstrated treatment technologies for these metal-bearing wastes. How is it that the Agency can now say that when attempting to render listed metal-bearing wastes non-hazardous (delisting) the drinking water standards must be met, but when land disposing them as a hazardous waste, over 10,000 times the level of metal constituents can be present in the extract from such wastes? Do hazardous waste landfills afford a 10,000 fold level of protection?

By choosing to stay with the statutory levels, and by allowing such high statutory levels to be determined by a leach test not direct waste concentrations, the Agency is allowing the highest possible levels of untreated metal constituents to be land disposed. The universe of affected wastes under this scenario will be very close to a null set. Moreover, the regulated community will be totally misled as to the standards that ultimately will be applied when the Agency develops best demonstrated achievable technology (BDAT) standards for these metal-bearing wastes in the future.

While it is true that the Agency is not explicitly required to lower these levels, they must make a determination on the protectiveness of the statutory levels. In fact, the legislative history explicitly states that the California levels are "a starting point" for establishing prohibition levels on the "California List". Upon further examination of the legislative history, it is clear to us that the Agency has an affirmative responsibility to examine the adequacy of the statutory levels.

The absence of data on the protectiveness of the statutory levels does not remove the responsibility to develop it. Moreover, there is nothing in the statute to indicate that the statutory levels are anything more than "starting points" for prohibitions. They are not definitive or even indirect statements of protectiveness. In addition, the Agency must be prepared to evaluate data that is presented to it by treatment firms such as ours regarding the adequacy of the statutory treatment levels.

These deficiencies are further compounded by the irony of the Agency's setting technology-specific BDAT (incineration) standards for the California list organics and PCBs irrespective of any "protectiveness" determinations, while saying that there is insufficient data to develop BDAT standards for the metals and cyanides. We remain very concerned about the attitude displayed by the Agency during our meeting which would seem content to let the perfect be the enemy of the good. Aside from being an exercise in regulatory schizophrenia, simply because EPA cannot identify or develop all of the necessary treatment information on all hazardous wastes likely to contain pollutants on the "California List" prior to the statutory deadline, does not mean that EPA may arbitrarily conclude that statutory levels will be protective of public health and the environment.

Moreover, much of the data and information (already evaluated by EPA during formal review of delisting petitions) shows the availability of technology capable of reducing leachate concentrations well below the "EP toxicity" leachate concentration levels at which the wastes are presently considered or "characterized" as hazardous by EPA. Since available technology presently exists to minimize the mobility and reduce toxicity of these pollutants to "safe levels" as established by EPA, we strongly recommend that EPA establish pretreatment standards for "California List" metals at current EP toxicity test or "characteristic" levels rather than statutory levels.

In effect, the Agency is saying that the public health is being protected, even if the treatment levels for land disposal of metals as a hazardous waste (100 to 10,000 times standards) and land disposal as a solid waste (100 to 6 times standards) are headed in opposite directions.

V. RECOMMENDATIONS

We believe that the proposed rule on "California List" wastes on November 8, 1986 must be revised in the following respects:

1. Establish performance standards for "California List" metals at current characteristic EP levels (i.e. 100

times Drinking Water Standards) as a minimum protection of public health and the environment using the TCLP extraction procedure to determine which metal-bearing wastes in question are subject to the ban by July, 1987;

2. Establish best demonstrated achievable technology (BDAT) standards for certain listed and characteristic metal-bearing wastes based on data and information from existing technology demonstrations that not only substantially reduce the toxicity or mobility of hazardous constituents, but effectively render such wastes non-hazardous.

3. Prohibit the use of absorbents as a sole means of treatment for the purpose of creating a "solid" rather than a "liquid" waste or diluting to meet the treatment standard itself.

Thank you for giving the HWTC the opportunity to present its views on this matter. Let me again re-emphasize that our membership stands prepared to submit relevant data and information supporting our position herein as requested by the Agency in promulgating the proposed rule. Please do not hesitate to contact me directly at 202/296-0778 to discuss the particular kinds of data and information that would be most helpful to you in evaluating our concerns.

Sincerely,

Richard C. Fortuna
Executive Director

"CALIFORNIA LIST" METALS DATA BASE SUMMARY

CONSTITUENTS OF CONCERN	NUMBER OF SAMPLES	TOTAL CONC. (AVERAGE) mg/kg	STATUTORY LEVELS + mg/l	HEALTH BASED STANDARDS mg/l (HBS)	LEACHATE CONCENTRATIONS IN EP EXTRACTS OF CHEMFIX PRODUCT / COMPARED TO HEALTH BASED STANDARD (HBS)		
					LESS THAN 1X HBS*	LESS THAN 10X HBS	LESS THAN 100X HBS**
ARSENIC	229	<0.01 - 2000 (Avg.= 34.47)	500	0.05	101 (44%)	217 (95%)	227 (99%)
CADMIUM	243	0.01 - 98000 (Avg.= 643.9)	100	0.01	13 (5%)	208 (86%)	232 (95%)
CHROMIUM	253	0.03 - 709970 (Avg.=4035.1)	500	0.05	62 (25%)	231 (91%)	247 (98%)
LEAD	258	0.1 - 96200 (Avg.=1879.6)	500	0.05	6 (2%)	213 (83%)	253 (98%)
MERCURY	188	0.005 - 37200 (Avg.= 43.70)	20	0.002	34 (18%)	105 (56%)	183 (97%)
NICKEL	234	0.05 - 37320 (Avg.= 588.4)	134	0.34	169 (72%)	229 (98%)	234 (100%)
SELENIUM	201	<0.01 - 80.0 (Avg.= 6.89)	100	0.01	40 (20%)	143 (71%)	199 (99%)
THALLIUM	N.A.	N.A.	130	0.01	N.A.	N.A.	N.A.

N.A. : Sample not analyzed for constituent.

+ : Statutory levels are based on the "California Metal Lists" published on the HSWA 1984.

* : 1 time health based standard equivalent to drinking water standard.

** : 100 times health based standard equivalent to EP toxicity standard.

Testimony of

William J. Ziegler

ThermalKEM Inc., Rock Hill, South Carolina

CyanoKEM Inc., Detroit, Michigan

Before the

United States Senate

Committee on Environment and Public Works

Subcommittee on Hazardous Waste and Toxic Substances

June 5, 1987

Regarding Environmental Protection Agency's

Proposed Land Disposal Restrictions

for the

California List Waste

51FR44714 12/11/86

Introduction

William J. Ziegler is Vice President of Health, Safety and Environmental Affairs for NuKEM Technologies Corporation, a company that operates two commercial hazardous waste treatment facilities. One facility, ThermalKEM Inc., uses incineration to destroy organic hazardous waste. This facility has capacity for 25,000 tons per year of hazardous waste of which 15,000 tons is solid waste, with planned capacity of 46,000 tons per year by mid 1989.

The other facility is CyanoKEM Inc., an inorganic waste treatment facility in Detroit, Michigan. CyanoKEM's expertise includes the treatment and destruction of cyanide waste. This testimony is primarily focused on the capabilities of this process and the proposed July 8, 1987 ban on landfilling of cyanide waste.

Summary

The EPA proposed rule for the California List (51FR44714 dated 12/11/86) includes a land disposal threshold standard for cyanide of 1000 PPM measured using the TCLP leachate test. This in effect represents a level of 20,000 PPM cyanide in the waste since the leachate test uses a 20 to 1 dilution factor. The following discussion provides justification for basing the cyanide land disposal standard on 1000 PPM measured using a total constituent analysis as opposed to a leachate test, and applicable to all cyanide bearing waste, solid, liquid and sludges. As will be seen, this approach would be most protective of human health and the environment, while being of minimum economic impact. At the same time, more than adequate treatment capacity exists to manage the additional waste banned from land disposal using this approach.

If the land ban for cyanide as proposed in December is implemented in July, there will be no net additional cyanide waste banned from landfilling compared with present practice, and the impact on the environment will continue to be severe.

Health Effects of Cyanide

Cyanide compounds are highly toxic materials classified as Class B Poisons by DOT regulations. Cyanides are toxic by skin absorption, ingestion or inhalation. The threshold for lethal effects is very low, with an acute fatal oral dose for humans ranging from 0.5 to 3.5 mg cyanide per kilogram body weight.

Cyanides are also highly reactive materials. At pH below neutral, hydrogen cyanide gas is generated which is lethal by inhalation. In a landfill disposal scenario where cyanides are disposed with other slightly acidic waste, or in soils that are mildly acidic, the potential for hydrogen cyanide generation is high.

Despite the high toxicity and reactivity of cyanides, hazardous waste regulations have failed to address the proper management of these types of wastes. Vague guidelines exist in the regulations concerning reactivity and compatibility, but without quantitative standards, the rigorous and proper management of these types of wastes is not possible.

The Hazardous and Solid Waste Amendments of 1984 represent the first attempt to regulate on a quantitative basis cyanide waste. The upcoming July 1987 ban in particular could be of great impact in restricting the land disposal of these wastes. Cyanides cannot be controlled in a land disposal situation. They are highly reactive with other chemicals, easily solubilized in leachate, are easily reacted to form a lethal gas. To bury cyanide waste and hope that nothing happens is high risk waste management practice. Cyanides can be destroyed using well established chemical treatment technology to be discussed shortly.

The EPA proposed standard for the cyanide land disposal ban of December 11, 1986 to be promulgated on July 8, 1987 is inadequate. I would like to cite the comments of the Natural Resources Defense Council (NRDC) on the proposed land disposal restriction, submitted to Docket No. F-86-LDR4-FFFF on February 25, 1987. NRDC used EPA's own modeling techniques to demonstrate that a leachate standard of 1000 PPM cyanide could result in a level of 167 PPM in a drinking water well. The fatal dose for a child is 10 PPM. Thus EPA's proposal would result in a level 15 times a level fatal to a child. This cannot be allowed to happen, especially since capacity and ability exists to treat this cyanide at minimal economic impact. NRDC commented that if a leachate test standard is used the land disposal limit should be .96 PPM instead of the proposed 1000 PPM.

Finally, in a separate guidance document from EPA (Memorandum from E. Claussen to Regional Administrators, Interim Thresholds for Toxic Gas Generation Reactivity July 12, 1985) it was recommended that cyanide concentration be limited to 250 PPM total for landfill disposal to protect landfill workers. The scenario of a worker standing near a truck unloading cyanide waste greater than 250 PPM would result in enough toxic gas generation to seriously overcome the worker. Yet in the December 11, 1986 proposed standard EPA is allowing the landfill disposal of 20,000 PPM cyanide. In effect, 1000 PPM measured using a TCLP leachate test is at least 20,000 PPM total cyanide, as a 20 to 1 dilution is performed in preparing the leachate.

CyanoKEM's Treatment Process for Cyanide Waste

The treatment process utilized at CyanoKEM involves alkaline chlorination (oxidation) coupled with certain proprietary reactions for the treatment of complex metal cyanides. The capacity of CyanoKEM's plant is 35 million gallons per year of which only 1.2 million gallons per year is being utilized. There are two byproducts of the treatment reaction, the separated residual solids from the treatment, a hydroxide sludge filter cake, and the purified effluent discharged to the City of Detroit. The effluent is regulated under Industrial Wastewater Discharge Ordinance 353H by the City. Below is tabulated data for a typical highly concentrated waste input to the plant and typical values of the output byproduct streams.

	Total Cyanide, PPM	Free Cyanide, PPM
Waste Input	500,000	500,000
Effluent Discharge Output	0.2	<0.02
Filtered Sludge Treatment Residue Output	300	<0.1

As can be seen these numbers represent a substantial level of treatment, as the toxic free cyanide is non-detectable in either plant output stream, and the reduction of total cyanide from the original waste input amounts to 99.94% destruction.

Problems with the Proposed Standard

The proposal to ban from land disposal liquids and solids containing free liquids with concentration of total cyanide in excess of 1,000 PPM is supported by CyanoKEM, and is a minor improvement over the original proposal of 1,000 PPM free cyanide in the HSWA of 1984. Certainly adequate capacity for cyanide does exist, as indicated by our 33.8 million gallons per year of unutilized capacity. As can be seen by the data tabulated here, our technology is capable of treatment to nondetectable free cyanide, and removal of better than 99.9% of total cyanide.

It is felt that consideration should be given to banning solids containing in excess of 1,000 PPM total cyanide from land disposal. A total limit does not differentiate free or leachable cyanide. As can be seen from data presented here, technology does exist to treat cyanides to <500 ppm total with no free or leachable cyanide present. CyanoKEM has confirmed that substantial quantities of solids containing 50,000 PPM cyanide, even sodium cyanide, are being disposed of in landfills currently. Several state agencies have informed us that levels above 50,000 PPM cyanide are permitted for land disposal on a "case by case basis." Solids containing cyanide in excess of 1,000 PPM total should not be landfilled, considering the extreme toxicity and mobility of such wastes, see earlier discussion, and recognizing that significant unutilized treatment capacity does exist.

Allowing the land disposal of solids containing 50,000 PPM cyanides is not protective of human health and the environment. Much tighter land disposal standards have been placed on much less toxic constituents such as acetone, butyl alcohol or methanol at levels as low as .05 PPM in leachate. Cyanides are extremely mobile and even in the solid form are easily leached into solution. Considering such problems as the underground cyanide fires at the #3 ranked NPL site, the Helen Kramer landfill in Mantua, New Jersey during the 1970s, landfilling of cyanide in any form, solid or liquid, should be minimized to the extent current treatment technology allows. It is inconsistent that a few states limit landfills to 1,000 PPM total cyanide whereas some states allow landfills to dispose of 50,000 PPM total cyanide (New York, Alabama).

Changing the wording from free cyanide to total cyanide on superficial examination sounds like an improvement over the original California list proposal, but in reality it represents a less stringent standard considering that EPA proposes using the ZHE extractor as the method of evaluation of compliance under the land ban rule. The TCLP test using the ZHE is carried out under pressure, and the extraction fluid is at a maximum pH of 5.0. Under this mild acidic condition, many cyanides could be released as hydrogen cyanide gas. Studies confirm that the pH of a cyanide solution must be above 10.0 to avoid completely the release of hydrogen cyanide gas. A large amount of cyanide could be released as a gas in performing the test, biasing the results low, and posing a serious safety risk to laboratory technicians conducting the test.

A second factor making the proposed standard less stringent is the fact that a 20:1 dilution is performed on the leachate. Thus in reality a waste would have to be above 20,000 PPM cyanide minimum to be ban from land disposal. When the factor of HCN release is taken into account, a waste may have to contain as high as 60,000 PPM cyanide total (by distillation), in order to exceed the 1,000 PPM ZHE extract standard for land disposal. EPA has replaced the word free with total, but instead of total what is really measured is leachable cyanide under acidic conditions which is a way of biasing a test for cyanide towards low recoveries. A far better test, of minimum risk to human health and the environment, would be the total cyanide distillation on the waste sample as is without preparing a leachate. The present EPA proposal would allow landfilling of liquids containing 20,000 to 60,000 PPM leachable cyanide. A total cyanide test based on distillation of the waste sample would result in landfilling only up to 1,000 PPM cyanide of which only 10 PPM is likely to be free cyanide. This is far more protective of the environment, and is an easier test to run, eliminating the 18 hours TCLP extraction time, and is a test readily available now to most generators and laboratories. Also as can be seen from data presented here, treatment technology is available to consistently meet a standard based on total cyanide.

The acidic pH of some soils used for cover material, and the problem of segregating acidic wastes (<5 pH) also creates a high risk of lethal hydrogen cyanide gas generation in landfill cells when placing such high levels of solid cyanide waste.

One final area of concern is that if the standard is left at 1,000 PPM leachable or free cyanide and limited to liquids, this will encourage many generators to practice solidification without treatment. Simply by adding iron salts, free cyanide can be made non-leachable long enough to pass the 18 hour TCLP test, and just by adding absorbent a liquid can be made to pass the paint filter test while diluting the cyanides. But without treatment, the cyanide can be very dangerous to human health and the environment over a long-term land disposal scenario. A standard that encourages such doctoring of a waste just long enough to pass the test without consideration for long-term health and environmental impact should not be allowed. Solidification of cyanides must be prohibited as a substitute for treatment, and the standard must be changed to a prohibition of total cyanide greater than 1,000 PPM in all waste, both solid and liquid, to discourage such cursory treatment prior to land disposal.

Cyanides Disposed of at Landfills

CyanoKEM has conducted detailed studies of the cyanide waste generation and disposal east of the Mississippi. The source of this information has been the state annual reports and EPA regional Biennial reports, as well as information obtained from industrial guides. Based on this information, it is estimated that 120,000 tons of cyanide are generated per year and disposed of offsite. Of this, 18,000 tons of cyanide waste is landfilled. Note that this does not account for the amount of cyanide stored on-site by a generator in surface impoundments. Surface Impoundment Standards will not be promulgated until November, 1988, and consequently it is hard to determine what quantities of cyanide waste are currently stored at generators site in over 200,000 surface impoundments, which do not meet minimum technology standards of double liners on leachate collection system.

It should be pointed out that cyanide generation is regionalized heavily. The midwest and the northeast, the market that CyanoKEM serves, accounts for approximately 90 % of the total cyanide generated east of the Mississippi. Other commercial treatment facilities are well situated in these regions to service these generators. This should be kept in mind when evaluating economic impact as far as transportation costs.

Initially, one might conclude that these figures represent good news in that 85% of the cyanide generated east of the Mississippi and managed offsite is going to treatment companies, and only 15% is going to landfills. However, our records show that the 15% going to landfills is a highly concentrated solid fraction of cyanide. Cyanide is a Class B poison which means that it is lethal above certain concentrations. In addition, cyanides are highly leachable. To assume that a landfill will be an impermeable barrier and will not generate leachate, and that a landfill liner will hold up to the leachate, is a very risky assumption, as the downside health impact of cyanide materials is lethal.

The 15% going to landfills is concentrated in primarily four land disposal facilities, as far as we can estimate, in the states of Ohio, New York, Alabama and Michigan. In the case of these four locations we have direct confirmation that cyanide levels up to 50,000 PPM (5%) are permitted for land disposal by the states and one state will tolerate up to 70,000 PPM (7%) cyanide. It is CyanoKEM's experience that we currently receive cyanide waste that are liquids in the range of 100 to 100,000 PPM cyanide or solids/sludges over 50,000 PPM cyanide. CyanoKEM rarely sees solids or sludges ranging between 10,000 thru 50,000 PPM. 70% of the cyanide waste currently received and treated at CyanoKEM is liquid, and only 30% is solids. So far in 1987 about 500 tons of waste quoted for disposal at CyanoKEM was lost to landfill companies, of which about 80% was solid cyanide in the range of 10,000 to 50,000 PPM.

This implies that currently the vast majority of cyanides being disposed of in landfills are solid and sludges in the range of 1,000 to 50,000 PPM. If the California list as proposed is implemented, there will be no effect on this segment as the proposed standards do not impact this range. Again, cyanides are highly toxic and leachable material, and unless one can envision a dry landfill with no leachate, one cannot conclude that there will be no environmental impact.

Economic Impact

If solid cyanides are banned from land disposal at concentrations greater than 1,000 PPM, the economic impact will be minimal. First, as seen from the earlier discussion, CyanoKEM has the capability to treat these wastes. The capacity is there also. As stated, 18,000 tons of cyanide are being landfilled per year. The capacity of CyanoKEM for liquids is about 140,000 tons per year, and the capacity for solids is about 45,000 tons per year. Our current utilized capacity is about 4800 tons for liquid and about 7600 tons for solids. Thus, at CyanoKEM alone there would be capacity to treat all of the land banned cyanide waste if the July final rule banned total cyanide greater than 1000 PPM for all form of waste liquid, solids and sludges. In addition to CyanoKEM there are nine other commercial treatment facilities east of the Mississippi that can treat cyanide waste.

To evaluate cost impact, taking the extreme case, the price charged by our facility for difficult highly concentrated cyanide waste is about $300/drum or $1300/ton. Landfill cost associated therefore be an additional $260/ton or $4.7 million dollars per year on the entire economy. This is well below the criteria of Executive Order 12291 requiring regulatory agencies do an economic impact of major rules likely to result in an annual cost to the economy of $100 million or more. As a comparison the November 8, 1986 land ban of solvent waste was predicted to have an economic impact of $152.4 million a year, based on 363,000 ton/year of solvent waste banned from landfilling. Note also that the landfill cost assumed is only what landfills charge generators to bury the waste. It does not include additional cost associated with post closure care, or remediation of groundwater if the landfill turns into a superfund site.

Conclusion

The economic impact of banning all solid cyanide waste from land disposal is miniscule in the overall waste management picture. The overall quantity of cyanide waste is small yet the environmental effects from landfilling these highly leachable and toxic materials is extreme.

If the land disposal ban for cyanide as proposed in December is promulgated, there will be no effect on landfill practices, or very little cyanide waste taken out of landfills.

If the criteria described in this testimony is used, namely all waste (solid, liquid and sludges), of 1000 PPM total cyanide based on a total constituent analysis, then 18,000 tons per year of highly toxic cyanide would be taken out of landfills at minimal economic impact to the nation. Since this standard would be of greatest benefit and protection to human health and the environment, it is in the best interest of the nation to promulgate it.

Finally, a major risk of not implementing this suggested 1000 PPM total cyanide standard is the allowed practice of on-site storage of waste in surface impoundments not meeting minimum technology standards (liners and leachate collection systems). Of the over 200,000 surface impoundments across the country, it is hard to estimate what fraction have cyanide waste. Yet even if a standard of 1000 PPM total for solid and liquids were implemented, and the 18,000 tons per year of cyanide currently landfilled all came to CyanoKEM, there would still be capacity at CyanoKEM for 135,000 tons per year of liquid and 37,000 tons per year of solid cyanide waste.

Recommendations

Based on the above discussion, the following is recommended for the upcoming July land ban final rule.

1. The standard of the July 8, 1987 land disposal ban be based on 1000 PPM total cyanide for all wastes (solids, liquids and sludges) measured using EPA SW846 Method 9010 as a total constituent analysis (not as a leachate test).

2. Prohibit solidification of cyanides or addition of iron to tie up free cyanide without pretreatment.

3. Third, finalize the long-overdue restrictions on the use of biodegradable and compressible absorbents in containerized waste disposal concurrent with the July 8, 1987 effective date of the California ban (51FR46824).

The statutory level for cyanide in the proposed land ban is too high and far from adequate to protect human health, in fact as commented by NRDC, it is dangerously high. The statutory levels were recognized as a starting point by Congress, and that EPA should reduce these thresholds where necessary to protect human health and the environment. Section 3004(d) states cearly that EPA shall substitute more stringent standards where necessary (42U.S.C. 6924(d)). The Senate report states that "the specified concentrations are not intended to be binding on the Agency. Indeed the Administration may substitute more stringent concentration levels" (S. Rept. No. 98-248 98th Cong.)

When this issue is discussed with officials with EPA, the attitude seems that the California list is not important, and that all waste of concern will be banned by May 8, 1990 eventually. In this time period over 70,000 tons of additional cyanide will be put into landfills, and an unknown large quantity of cyanide waste will be improperly and ineffectively managed in surface impoundments not meeting minimum technology standards. Some individuals in EPA have said that the waste to be included under the California list ban as proposed is a null set. Our studies also show no impact of the proposed rule on phasing cyanide out of land disposal units. Is it worthwhile practice of Congress and EPA to promulgate rules that have no effect?

It is felt that this current EPA propsal is a serious crisis and does not adhere to the program and intent of the HSWA of 1984 to minimize disposal of toxic waste in landfills, it does not recognize that landfilling is the least desirable means of waste disposal, and it certainly does not encourage treatment. Treatment technology for cyanides and metals in particular is well established for decades, and there are numerous commercial facilities available for those that cannot install their own systems. There is no need to relax the California list.

CyanoKEM would be glad to provide you with more process information, treatment data, or discuss any of these points, at our facility in Detroit or in your offices. I ask you to please give full consideration to these points as I strongly believe they are in the best interest of progress in this nations' Hazardous Waste Management practices. Thank you for your consideration and for the opportunity to testify on this important matter.

Sincerely,

William J. Ziegler
Vice President of Health,
Safety, and Environmental Affairs

STATE OF CALIFORNIA—HEALTH AND WELFARE AGENCY

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June 12, 1987

Honorable Max Baucus
Chairman
Hazardous Waste and Toxic
Substances Subcommittee
United States Senate
Committee on Environment and Public Works
Washington, DC 20510-6175

Dear Senator Baucus:

Thank you for the opportunity to provide my comments on the implementation of the land disposal restrictions required by the 1984 amendments to the Federal Resource Conservation and Recovery Act. For several years I have been involved in reviewing the U. S. EPA developing land disposal restriction program and have prepared numerous comments on behalf of the Association of State and Territorial Solid Waste Management Officials (ASTSWMO). Also, since 1983, I have been in charge of implementing California's land disposal restriction program. California's program has served as a model for the 1984 amendments to RCRA.

First I would like to respond directly to the questions in your letter; later I would like to make some general comments. Also, I have enclosed staff reports prepared for the implementation of California's land disposal restriction program, letters sent on behalf of ASTSWMO to U. S. EPA and other relevant correspondence.

Question (Q):

Q.1. "What has been the effect of land disposal bans to date? How much waste has been banned, how much has been treated and what type of capacity exists to accommodate the treatment of this waste?"

Answer (A):

A.1. Solvent Wastes

This is probably the best category to restrict first in California as several recycling and treatment operations exist. EPA's F001 to F005 waste categories are very narrowly defined and therefore impossible to identify within the much broader California hazardous waste categories. Most solvent wastes go to recycling or are blended as "supplemental fuel" for the General Portland cement kiln located in Lebec (Kern County). There are 20 commercial solvent recyclers with a capacity of about 140,000 tons in California. General Portland accepted 20,000 tons of solvent waste in 1986 for incineration. A wet air oxidation unit is capable of treating low concentration solvent wastes. (See attachments #7 and #8.)

NOTE: The attachments referred to have been retained in committee files.

Dioxin Wastes

This is a controversial category, limited only to wastes from the "manufacturing" of pentachlorophenol and similar compounds, and it does not include wastes from the use of pentachlorophenol, although chemically there is not much difference, if any. (See attachment #6.)

At this point, I believe there is no such waste in California because of the narrow definition and the fact that PCP is not being manufactured in California. It however, is used extensively in California, and confusion exists among California's site operators whether or not the waste can be accepted. There is no facility permitted to treat dioxin containing wastes in California or anywhere else in the U. S. at this time.

Commercial operators are concerned about the negative publicity of accepting dioxin wastes. I am not clear what is to happen in 1988 when the proposed deadline will come into effect and there may not be any incinerator willing to accept these wastes.

Q.2. "How much waste, not now being treated, will be treated under the Agency proposal for California list wastes? What capacity or capacity limitations exist to treating proposed land disposal banned wastes or additional quantities of waste?"

A.2. In California we have implemented similar restrictions in 1984-85, with one exception. That is the land disposal restriction for solid hazardous waste containing more than 1000 ppm of halogenated organics. California's restrictions depend on the treatment capacity available, and we have not been able to have a rotary kiln built in California. In fact, there is none west of Chicago and Houston. As some of these wastes could be treated in surface impoundments, we were able to implement all these deadlines, and facilities are now under construction to provide aboveground treatment capacity which is required to be used after January 1, 1988 by California law. (See attachments #1, #2, #3, #4 and #5.)

Q.3. "Are the concentration limits proposed by the Environmental Protection Agency for the proposed "California list" consistent with concentration limits which would be considered protective of public health in your state?"

A.2. EPA's concentration limits are identical to those used in California.

Q.4. "What capacity exists to treat wastes banned from land disposal under the Agency proposal? What capacity exists to treat wastes at lower concentrations?"

A.4. Waste treatment volume for offsite disposal has decreased as onsite treatment and source reduction have increased. This trend might continue. It is expected that California will have adequate capacity for aboveground treatment in 1988.

Q.5. "The California list proposal utilizes a waste stream concentration test rather than a toxic constituent test. Please comment on the use of this test in determining what wastes are being banned and how this treatment of the waste compares with how hazardous waste is regulated in your State?"

A.5. The significant difference between the California and the federal systems is that the federal system lists wastes as hazardous based on the original process which generated them and the generators can never treat those wastes to render them nonhazardous, regardless of the level of treatment. This is contrary to the purpose of California's land disposal restrictions, which should encourage treatment and provide incentives for treatment to the point that the wastes will not need to be handled as hazardous. The California system is based on the characteristics of the wastes only and if the "hazardous properties" of the wastes are removed, then the wastes are no longer "hazardous" and can be handled as nonhazardous wastes. (See attachments #9, #10, and #11.) I am not familiar with the reliability and efficacy of the TCLP test. We will be evaluating this test in the near future.

Q.6. "Please comment on the overall status of the Environmental Protection Agency's implementation of the land ban proposals and specifically how these policies are affecting the disposal of hazardous waste."

A.6. The U. S. EPA has focused on the development of the regulations and the implementation of the program with a narrow focus on enforcement and surveillance. I believe that successful implementation of the program will require not only compliance monitoring, but will also require the establishment of incentives for the development of treatment and recycling capacity and the elimination of any disincentives to such development. (See attachment #10.) Needed incentives shall include, but not be limited to:

1. Assigning the highest priority for permitting of new treatment/recycling facilities by federal, state and local agencies.

2. Revising the federal waste classification system to allow for sufficiently treated waste to be handled as nonhazardous.

3. Establishment of funding or other financial incentives for regional treatment centers, particularly in regions lacking adequate capacity.

As a part of implementation of RCRA land disposal restriction, the following issues should be reevaluated:

1. The availability of disposal of untreated wastes by underground injection provides a disincentive for the construction of treatment facilities, as it is cheap and is currently the least regulated form of land disposal. At this point, the EPA's decision regarding the banning of disposal by underground injection is not known.

2. The application of land disposal restrictions to "cleanup" wastes from contaminated sites discourages the removal of such wastes from sensitive areas where waste might be in contact with ground water etc., because of the lack of available treatment (or its high cost).

   Present exemptions from land disposal restrictions for agency mandated cleanups does not help responsible parties or state funded cleanup actions.

3. Restrictions on the land disposal of lab packs appear unreasonable at this time. Lab packs are difficult to treat and handle and it might be best to continue allowing their land disposal, under stringent conditions.

Hopefully my comments will be of interest to you and your staff. If you have any further questions, please do not hesitate to call me at (916) 324-1819.

Sincerely,

Jan Radimsky
Supervising Waste Management Engineer
Alternative Technology Section
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Enclosures

JR:mp

Joan K. Leavitt, M.D.
Commissioner

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AN EQUAL OPPORTUNITY EMPLOYER

June 12, 1987

The Honorable Max Baucus
Chairman, Hazardous Wastes and Toxic
Substances Subcommittee
Committee on Environment and Public Works
U. S. Senate
Washington, D. C. 20510-6175

Re: Subcommittee Oversight on "Land-Disposal Bans"

Dear Senator Baucus:

We appreciate the opportunity to participate in your subcommittee's oversight hearings on the Land-Disposal Bans included in the Hazardous and Solid Waste Amendments of 1984. Since we are unable to offer testimony in person, please accept this letter for inclusion in the hearing record.

Your letter asks a number of questions dealing with the effect of the first phase of the land bans, and projections regarding the second and following phases; most deal with questions of waste quantity or treatment capacity. I believe it appropriate, first, to state that E.P.A., and most states, do not have the ability to quote accurate, current numbers on waste quantities. The national hazardous waste program, under RCRA, requires only biennial reporting; collating the data, correcting it, and organizing it takes close to another two years. Hence, the numbers E.P.A. deals with are at least two years old, and in some cases close to four years old. There can be substantial changes in waste production and handling in such time periods. Even states with well developed, staffed and automated programs can be several months to a year behind in data processing. Therefore, the real nationwide effect of a given phase of the land-disposal ban will not be reflected in the statistics for some time - roughly two years - after they go into effect.

Secondly, the issue of capacity is very nebulous. "Treatment capacity" is a term that is thought to be understood by many people, but it has never been closely defined. Thus, your understanding of how much "treatment capacity" exists could vary tremendously from my understanding; E.P.A.'s could be substantially different from either. Compounding the problem, the question of available treatment capacity data suffers from the same time lag as does the quantity data. It has been reported that some of E.P.A.'s estimates of capacity are based on data from surveys done in the 1981 to 1983 time period. These could be grossly in error in 1987, in either direction.

As a final result, RCRA program managers at both the state and federal level are working from their "best guesses" regarding current volumes of waste generation, and the capacity available to treat or dispose of it. Remember also, in the treatment arena, that some of the estimated "RCRA" capacity must be shared with TSCA and CERCLA related wastes. These items, especially the Superfund wastes, will make a substantial reduction in "real" capacity available.

To answer your questions specifically:

1) The effect of the solvent/dioxin bans to date has not been dramatic. The state of Oklahoma does not produce dioxins to any large extent, and there are informal programs in place to encourage recycling of solvents wherever possible. Although there is no specific regulatory basis, Oklahoma has been discouraging the land disposal of solvents, especially chlorinated solvents, for several years. Most items that could not be recycled went to out-of-state incinerators prior to the bans, and continue to do so.

2) As discussed above, we do not have the ability to predict waste quantities as accurately as we would like. We do not anticipate any problems with the heavy metals limitations; cyanide treatment may present minor problems; most H.O.C.'s are already being treated out-of-state, but those that aren't may experience difficulty in finding new handlers; there is no PCB treatment capacity in the state. Our limited experience with the solvents ban indicates that the main problem faced by generators will be one of increased expense.

3) The concentration limits proposed by E.P.A. are based on a series of models and statistical studies made, using various assumptions about dilution, leak occurrence and leak rates, etc. We have doubts about the adequacy of models used, and whether they can be applied uniformly, nationwide. To our knowledge, there has not been any field verification attempted. Some of the assumptions made were not as conservative - protective of human health - as they might have been. Perhaps it would be fairest to say that we have a certain amount of scepticism regarding the limits used, but we have no hard data available to refute them.

4) Please see number 2, above.

5) The approach taken by EPA in using a waste stream extraction concentration test, rather than a total constituent test, is at the heart of our concerns. The extract concentrations are again based on modelling efforts, which require certain assumptions that may or may not apply in a specific instance. It is a somewhat broad interpretation of the mandate Congress seemingly gave to E.P.A. Additionally, the E.P.A. proposal is limited strictly to those wastes specified, (i.e., liquids) when it would have been very simple to include the solids associated with these liquids. The proposed 40 CFR 268.32, completely ignored the solids associated with the liquids they contain. Although this will be "fixed" in subsequent phases under the "one-thirds," it seems illogical, as well as inconsistent, to fail to address these solids now.

6) E.P.A. is working against some very tight deadlines to meet the mandates of the HSWA. They are making what we believe to be an honest effort to meet the mandates of HSWA. However, E.P.A. reads the mandates on HSWA somewhat loosely, and some of the decisions that have been made may not be 100% "protective of human health and the environment." This approach has served to significantly reduce the impact the land-disposal bans could have had on industry.

The effect of the land-disposal bans in Oklahoma, to date, have been noticeable, but have not been as drastic as forecast. We are aware of no serious problems or dislocation that have occurred as a result of their imposition.

We appreciate the opportunity to comment. Please feel free to contact us, if you have further questions.

Very truly yours,

Donald A. Hensch

Donald A. Hensch, P.E., Director
Industrial Waste Elimination Program

DAH:rmp

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STATEMENT

of

DAVID R. CASE
GENERAL COUNSEL

HAZARDOUS WASTE TREATMENT COUNCIL
WASHINGTON, D.C.

on

Proposed Rule to Establish Phase II
Burning Standards for Non-Incinerator Devices
(52 FR 16981, May 6, 1987)

before

Public Hearing
U.S. Environmental Protection Agency
Washington, D.C.
June 5, 1987

The Hazardous Waste Treatment Council (HWTC) welcomes the opportunity to provide testimony on this most important rule-making, and applauds the Agency's action in developing and issuing this proposal in rough proximity to the statutory deadline established under the Hazardous and Solid Waste Amendments (HSWA) 1984.

I. BACKGROUND ON THE COUNCIL; STATEMENT OF INTEREST

The Treatment Council is a national association of firms committed to the primary use of high-technology treatment and to the restricted use of land disposal in the management of hazardous waste. The Council is the largest organization representing commercial hazardous treatment and management firms and equipment manufacturers. The Council's member companies are engaged in the treatment and management of hazardous wastes through the use of reclamation, solidification, fixation, neutralization, chemical and biological destruction and treatment; thermal destruction through the use of incineration, cement kilns, wet oxidation and pyrolysis; and the appropriate use of land disposal subject to certain restrictions and necessary pretreatment.

Council membership also includes firms that supply fuels to industrial furnaces and burn hazardous wastes in such devices. The Council advocates national performance standards rather than the use of a specific technology(s). We were instrumental in the development of several key provisions of the 1984 Amendments to RCRA, particularly the burning and blending provisions [RCRA 3004(q)(r)(s)] that are most relevant to these discussions.

In addition to these legislative activities, the Council has actively participated and commented on the Agency's development of the Hazardous Waste Fuel Specifications Standard (50 FR 49164, November 29, 1985) to establish constituent specifications and criteria for identifying hazardous waste fuels and used oil fuels (Phase I standards). We have also challenged in court various deficiencies in the Phase I standards, and actively opposed the efforts of those that have sought exemptions from these rules for burning practices that involve energy recovery. I am referring to exemption requests for certain types of industrial furnaces that purportedly burn hazardous waste solely for the purpose of materials recovery. (See November 29, 1985 FR 49171, discussion of Cadence Chemical exclusion request.) In fact, of the issues in which the Council has been involved since its formation in February 1982, closing the regulatory loophole for wastes that are burned for energy recovery and materials recovery is one of the Council's most enduring and fundamental concerns. Irrespective of the stated purpose of the burning practice (destruction, energy recovery or materials recovery), we must all comply with the same rules which in turn ensure equal protection of public health and the environment.

II. OVERVIEW

While the level of effort and detail in the proposed rulemaking is to be commended, there are significant, if not fatal, deficiencies in the proposal that render it both unacceptable and unlawful. By its very nature this is a very complex regulatory area. Several elements of the Agency's approach are creative, thoughtful and sound. However, with the vast number of variances, waivers, site-specific variations, and frank omissions of certain standards for non-incinerator devices, one is left with the impression that a principal aim of this rule is to avoid overregulation of non-incinerator devices, rather than establishing national minimum performance standards for these units that equal if not exceed Subpart O requirements. This concern is reflected at all levels of the regulation, including its scope of coverage, performance standards, qualification for interim status, and the policy regarding burning residuals.

III. SCOPE OF COVERAGE

A. Type of Units Subject to Coverage

While the proposed rule applies to all boilers burning hazardous wastes, including residential, commercial, and institutional boilers, the scope of coverage of the proposed rulemaking as it applies to industrial furnaces is far more vague.

The proposed rule lists eleven categories of industrial furnaces that are subject to the proposed rule. The rulemaking however, does not address the question of whether the units that are not named, or are hybrids of named categories, are also subject to coverage. For instance, a question has arisen whether certain types of "drying furnaces" that are simply used for water removal, but which may be fired by hazardous waste fuels, are covered. Moreover, the Agency's San Francisco regional hearing on this proposed rulemaking ironically revealed that electric resistance furnaces, which do not rely upon "controlled-flame combustion", are not subject to the proposal when clearly they should be.

Not only must such units be subject to coverage, but the Agency must establish a policy regarding other types of industrial furnaces that are not explicitly covered in this rulemaking. The Agency should make clear that all furnaces burning hazardous wastes are subject to these rules, and any unnamed furnace is regulated in a manner identical to that type of named industrial furnace that it most closely approximates. Otherwise, the operators of furnaces that do not fit the precise description contained in the rulemaking will consider themselves exempt from coverage. Even for units that are named, a facility may decide that its unit is sufficiently different from the description in the Agency's rulemaking to render it inapplicable to the unit in question. Without a backup presumption that encompasses all industrial furnaces that burn hazardous wastes, the Agency is vulnerable to self-styled claims of exclusions.

B. Energy and Materials Recovery

The Treatment Council supports the Agency's decision to regulate the burning of hazardous wastes in boilers and industrial furnaces irrespective of the heating value of the waste. The Agency's prior enforcement policy on this matter (March 16, 1983 Federal Register) only regulated the burning of low-heating value wastes less than 5 - 8,000 btu per pound. While this enforcement policy had the potential to be a useful interim measure, the fact that the Agency never invoked this policy clearly indicates the need to establish a regulatory requirement.

Similarly, the proposed rule extends jurisdiction to those secondary materials that are burned solely for materials recovery. Evidence from our inquiry and transmittals to you regarding the Inspiration Copper facility in Arizona reveal that burning for materials recovery alone has the potential to be far more than a benign activity.

In general, the Council concurs with the Agency's characterization that the burning of certain secondary materials for materials recovery that are "indigenous" to the process in which the industrial furnace is used is beyond the Agency's jurisdiction. That is, only materials generated by a process using the same type of industrial furnace as that in which the burning originally occurs will be considered to be "indigenous". We also agree that secondary smelting furnaces should not be included within this characterization of "indigenous" burning. Of particular concern are those smelting furnaces that are burning electroplating or other wastes that are clearly not related in any way, shape, fashion, or form, to the waste from any smelting process that might otherwise be considered "indigenous".

The purpose-based burning distinctions (i.e., energy and materials recovery versus destruction) must come to an end. The purpose for which the waste is burned bears no relationship whatsoever to the safety, efficacy and integrity of the burning process. We applaud the Agency's belated recognition of this important principle, and believe that this same policy should also be extended to the residues generated from the burning in all non-incinerator devices. (See further discussion below under "Residuals".)

C. Small Quantity On-Site Burners

The proposed rule exempts from regulation so-called small quantity on-site burners from the provisions of this regulation. While the Council does not object to the establishment of such a category, we believe that the Agency has seriously misconstrued the nature, intent and scope of RCRA 3004(q)(2)(B) in this regard.

That provision provides for exemptions for "de minimis" quantities when burned on-site in their own boiler or industrial furnace. However, in justifying its approach the Agency relies primarily, if not exclusively, on its regulatory impact analysis indicating that there are simply "a large number of devices that burn hazardous waste fuel" and "it would not be cost-effective for these devices to comply with the proposed controls since alternative management practices would be less expensive." This is an unlawful criterion upon which to rely for the purpose of establishing any exclusion level, be it termed small quantity, de minimis, or whatever. We believe that the upper limit for de minimis quantities burned under this exclusion should be much less than the 100 kilograms per month that is allowed for small quantity generators. "De minimis" was intended to be incidental volumes and materials such as oily rags, small scrap pieces, etc. Moreover, the Agency must establish a level for burning of wastes in these units based upon health and environmental impacts, not on economic criteria.

Of equal importance is the fact that there are no recordkeeping or reporting requirements attendent to this exclusion, other than a one-time notification. The Agency should also restrict the burning of acutely hazardous wastes under this exclusion, and require the filing of an annual report with the Agency or authorized state in order to know what types and quantities of wastes are being burned at given locations. Without this information and required record-keeping, EPA cannot know whether small quantity burners are staying within the regulatory requirements, since EPA and the states clearly do not have the resources to conduct on-site inspections of these burners. The requirement of filing an annual report provides a necessary and useful check on their activities.

D. Off-Specification Used Oil Fuels

The proposed rule does not apply to the burning of off-specification used oil fuels in boilers and industrial furnaces. While the Agency states that it will be developing such regulations in the near future, including standards for metals, CO and other performance standards, we see no basis for excluding those units from coverage in today's rule. We note that the House Report to H.R. 2867 states that, "The Committee intends that EPA exercise this authority [to regulate burning practices generally] in tandem with its authority over used oil so that used oil-derived fuels are regulated at the same time." (H. Rpt. 98-198, 97th Congress).

The so-called off-specification used oil fuels contain considerable concentrations of metal-bearing constituents, which are primary concerns of both the Phase I and Phase II regulations. Therefore, we urge the Agency to include within the scope of this regulation those units that burn off-specification used oil fuels.

IV. Qualifying for Interim Status

In general, the Council supports the Agency's approach to qualifying for interim status, but believes that several significant amendments to the proposed rule are needed. These include the following:

- Only those units that have been fully constructed, received all necessary permits, and have the capability to burn hazardous wastes by the "date of issuance" of the final rule in the Federal Register should be deemed to be "in existence" and thus eligible for interim status. Other units that are under construction and desire to burn hazardous wastes should be required to submit and receive a Part B permit prior to burning.
- We concur with the policy that allows new units to qualify for interim status at existing interim status facilities. It should also be extended to facilities that have secured a Part B permit. To do otherwise would deny "soon-to-be-permitted facilities" from the same opportunity available to those that have never managed a hazardous waste in the past. Those firms that have the most experience burning hazardous wastes, and that have achieved permitted status, must also be eligible for this consideration.

- Non-incinerator units that qualify for interim status under this rulemaking should have to submit a Part B application for a RCRA permit consistent with the loss of interim status policy specified in RCRA 3005(c)(2)(C). That provision stipulates that incinerators that did not submit a Part B application within two years of enactment of HSWA, or by November 8, 1986, lost interim status. Thus, non-incinerator units should be afforded two years from the date of issuance in the Federal Register of the final Phase II rule to submit a complete Part B application. To do otherwise would merely encourage continued interim status operation of potentially unqualified facilities, while permitted facilities operated under a more stringent and restricted regime.

- The Agency must prohibit the circumvention of RCRA storage requirements by facilities that burn hazardous waste fuels by extending the RCRA Part 264 storage standards to facilities that store or blend hazardous waste fuels in railcars and tank trucks. Currently the Agency does not extend storage requirements to these types of units and operations, which is becoming a very popular method of avoiding RCRA storage standards. While an occasional unloading of a tank or truck directly into a burning unit may be necessary due to the nature of the wastes, reliance on feeding into a burning unit from a railcar or tank truck should not be the basis for avoiding the applicable Part 264 standards. While the railcars and tank trucks are feeding wastes, storage is also occuring. Facilities that are currently engaged in such practices should be allowed six months to come into compliance with Part 264 standards.

V. EXCLUSIONS FROM PERMITTING STANDARDS AND REQUIREMENTS

A. Low-Risk Waste Waiver

The proposed rule contains a site-specific, risk-based waiver of the DRE standard, trial burn, and the flue gas CO limits for units burning so-called "low-risk" wastes, including such compounds as phthaltes, benzene, methylene chloride, TCE, and trichlorophenol when burned at "low firing rates" and when certain operating conditions are maintained. This waiver is flawed and unlawful in both its concept and structure. While RCRA provides for an explicit exclusion for so-called *de minimis* burning of hazardous wastes, it did not similarly provide an exclusion for units burning low-risk wastes. None of the wastes in the preamble (52 *FR* 17002) are considered by our members to be low-risk wastes, particularly when burned under low-efficiency, low-temperature conditions. Moreover, the rulemaking fails to specify any type of recordkeeping, notification or other form of verification during interim status to ensure that such facilities are maintaining proper conditions.

The statute if very explicit on where and when site-specific factors may be taken into account. When Congress wanted site-specific factors to be considered, it so specified. Congress specifically authorized EPA to consider location characteristics and certain site-specific factors (e.g., distance to underground sources of drinking water) with respect to only certain statutory requirements, such as the applicability of the minimum technology requirements of RCRA Section 3004(o). See RCRA Sections 3004(o)(2) and 3005(j). The wording and the legislative history of these provisions show that Congress specifically referenced site-specific factors in very few situations and intended that these exceptions be narrowly construed.

As with other performance standards established by this rulemaking (i.e., HCL and metals discussed below), the Agency is engaging in a form of site-specific variance from national performance standards that is not only inappropriate, but unlawful. The Agency in many respects is not closing the loophole for burning of hazardous wastes, but merely redefining it under the headings of low-risk waste waivers, special operating conditions, and site-specific variances.

B. Boilers Operating Under Special Requirements In Lieu Of a Trial Burn

Boilers operating under a series of special operating requirements are not required to perform a trial burn to demonstrate conformance with the DRE performance standard. This provides a major opportunity for uncontrolled and unverified burning of hazardous wastes. Why should this policy not similarly apply to hazardous waste incinerators? Why should anyone have to perform a trial burn provided they operated under "special" conditions? The purpose of the trial burn is to indeed verify that assumptions about design and operating conditions are borne out in practice. This is equally true for a boiler burning a hazardous waste whose primary aim is to recover heat, not ensure the highest possible DRE. Moreover, this waiver is based on EPA's tests at just three boilers. There is just no valid basis for exempting these units from a trial burn. These exclusions, collectively do little more than undermine the credibility of the rule.

VI. PERFORMANCE STANDARDS

A. Destruction and Removal Efficiency (DRE)

Aside from our objections to the "low-risk" and "special operating conditions" trial burn waivers, we support the Agency's use of the existing Part 264 Subpart O standards for non-incinerator units.

B. Particulate Standards

The Council strongly objects to the Agency's failure to include a particulate standard as a permitting requirement for burning of hazardous waste in non-incinerator units. The particulate standard is an important measure of the emissions from any combustion facility, and is an area where states have frequently imposed more stringent standards. Moreover, the particulate standard takes on additional importance in light of the fact that the Agency has established emission standards for metal constituents. Several firms within the industry question whether the metal emissions from industrial furnaces when measured as particulates could meet the .08 grains per dry standard cubic foot requirement of Subpart O. There is no basis for omitting this performance standard for non-incinerator units. It is an achievable standard for both incinerators as well as other types of industrial furnaces and kilns that burn hazardous waste, and it provides an appropriate check on emissions established for HCL and metals.

C. Carbon Monoxide

On balance the Council supports the Agency's approach to establishment of CO standards as a means for verifying or checking the combustion efficiency of the unit. The CO level is an appropriate check on DRE and serves as a surrogate measure of products of incomplete combustion (PIC). In the same vein, we note that a further check on metal emissions is needed in the form of a particulate standard, particularly in light of the Agency's expressed concerns about metal emissions.

Given the fact that many furnaces, cement kilns in particular, have high CO emission rates for reasons unrelated to the burning of hazardous wastes, we believe that the CO standards for these units could be established through the trial burn. The CO limits for such units should recognize the contribution to CO emissions from the manufacturing process being carried out in the unit. In addition, we would urge that the Agency establish the CO requirement as an interim status standard and require the immediate submission of a trial burn plan to verify compliance.

D. Metal Emissions

In general, the Council supports the Tier III levels for metal emissions that have been proposed in the rulemaking. There is a concensus of opinion that the tier system as proposed is unnecessarily complex, and that the Tier IV approach of site-specific variances from the national performance standards lends itself to excess dispersion, rather than increased removal of metals from the waste feed and stack gases. The statute does not allow for explicit consideration of site-specific factors in establishing either metal or HCL emission standards. On balance, it was the view of many of our members that Tier IV will contribute to an extension of stack height, rather than to an elimination or lowering of metal emissions from a unit.

While we are still assessing the appropriateness of the Agency's approach to the Tier III standards, there was a general sense that it at least represents a national performance standard that could serve as a uniform basis for a specific type of furnace and terrain combinations. Several members also believe that a separate emission limit should be established for each metal constituent, irrespective of the type of burning unit, rather than a level that varies according to terrain and furnace type. There was also significant concern about the groupings of various furnaces.

E. HCL Emissions

The Council members strongly believe that the tier system is inappropriate for establishing HCL emission levels, and instead favor the imposition of the same 99% removal standard as currently applies under Subpart O. There was a consensus that the levels of HCL emissions allowed under the tier system were excessive, and that far greater levels of removal could readily be achieved through existing technology.

VII. COMBUSTION RESIDUALS

The proposed rule reiterates the Agency's misinterpretation of the statute by excluding boilers that co-fire hazardous waste with coal, if the coal provides at least 50 percent of the boiler's fuel values. The Agency's misinterpretation also resurrects the "primary purpose test" to determine the regulatory status of combustion residuals from industrial furnaces, even though it has eliminated this approach (i.e., burning for destruction, materials recovery, or energy recovery) in asserting basic jurisdiction over burning practices.

The Agency's logic is difficult to follow, but it seems to go something like this. If an industrial furnace processing ores or minerals is burning a hazardous waste solely for energy recovery, the Agency considers the residuals to be from the processing of ores and minerals, and hence excluded from RCRA coverage. The Agency argues that when wastes are being burned for materials recovery, however, "a different situation arises because wastes are actually being processed". Therefore the device is no longer considered to be processing an ore or mineral if the greater volume of material feed is hazardous waste. If the majority of the material feed processed through the device is not an ore or mineral, then resulting residues are not deemed to be from processing of ores or minerals. The final step in this labored chain of logic states that, "the Agency cautions that these principles do not apply when a device burns waste to 'destroy' them or where destruction is the 'dominant purpose' of burning".

Not only is this line of reasoning strained and at odds with the policy the Agency used in establishing its jurisdiction over all burning practices, (i.e., destruction, materials recovery, and energy recovery) in other parts of this proposed rule, but it is without basis in the statute. The Bevill Amendment [RCRA 3001(b)(3)] applied to certain types of mining wastes themselves, not to the residuals from the burning of hazardous wastes fuels in mining furnaces. The Agency's reference to RCRA 3004(q) as sustaining the Agency's policy is wrong. Section 3004(q) is intended to ensure that the residuals from burning of fossil fuels themselves do not become a hazardous waste until such time as EPA conducts special waste studies and issues the required determination. This Amendment was included at the request of utility groups, many of whom knew at the time that their fossil fuel combustion residuals would flunk the EP toxicity test. There is no basis for the Agency to infer support for its burning residuals policy from RCRA 3004(q).

The Council very strongly believes that all combustion residuals must be viewed the same, irrespective of whether they are derived from a boiler, industrial furnace, industrial kiln, or hazardous waste incinerator. The derived-from rule must be applied equally to all combustion residuals.

However, we support and urge the Agency to carry forward on our recommended amendment to the derived-from rule that establishes self-implementing delisting standards as a component of the permit process. This amendment to the derived-from rule which is contained in the June 3, 1986 Federal Register notice on portable treatment unit permitting would allow delisting levels to be established as a condition of the permit, pending necessary verification, recordkeeping, and periodic reporting to the Agency. Furthermore, we would encourage the Agency to publish uniform delisting levels for Appendix VII constituents to serve as the basis for implementing such delisting levels on a national basis. The establishment of target levels contained in facility permits based upon uniform standards for waste constituents in combustion residuals generally would ensure proper combustion and equal protection of public health irrespective of the type of unit involved.

The solution to the problems posed by the derived-from rule are not solved by pretending that only incinerator combustion residuals pose a hazard, and that all others are deserving of special treatment.

VIII. STORAGE STANDARDS FOR FUEL BLENDING FACILITIES

The Council strongly supports the Agency's proposed changes to the Subpart D Part 266 storage standards for hazardous waste burning, blending and storage facilities. Facilities that store and blend hazardous waste fuels should be subjected to the Part 264 standards in accordance with the approach outlined in the proposed rule.

IX. CONCLUSION

The Treatment Council will submit more detailed written comments on the proposed rule, but we trust this testimony has indicated the major areas in the rule that we support and those that require rethinking. We commend the Agency for its substantial efforts, but we strongly believe that a little less in the nature of special waivers and exemptions would result in a lot more protection and consistency. That, after all, is the Agency's principal mandate.

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